IMPERIAL BUREAU
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TRINIDAD AND TOBAGO.

ADMINISTRATION REPORT

OF THE

DIRECTOR OF AGRICULTURE,

FOR THE YEAR 1926.

TRINIDAD:
Printed by the Government Printer,
Government Printing Office, Port-of-Spain.

1927.

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R. W. M. LEACOCK	St. Andrew and St. David	Sangre Grande.
A. H. PEÑA	St. Patrick	Siparia.

Ground Provisions Depot.

Manager	R. S. REDMAN.

Fruit Depot.

Manageress	Miss D. ECKEL.

TRINIDAD AND TOBAGO.

Council Paper No. 90 of 1927.

DEPARTMENT OF AGRICULTURE.

Administration Report of the Director of Agriculture for the year 1926.

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REPORT ON THE DEPARTMENT OF AGRICULTURE, 1926.

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DEPARTMENT OF AGRICULTURE.

Administration Report of the Director of Agriculture for the year 1926.

Council Paper No. 90 of 1927. *M.P. No. 4513/1927*

HON. COLONIAL SECRETARY,

I have the honour to submit, for the information of His Excellency the Governor, the report for 1926 on the Department of Agriculture.

STAFF.

Mr. W. Nowell, Assistant Director and Plant Pathologist went on leave in August prior to taking up his new appointment as Director of Science and Agriculture, British Guiana. This post he occupied for a very short time owing to his being appointed Director of the re-constituted Agricultural Research Institute at Amani, Tanganyika Territory. Mr. Nowell's departure is a very great loss to the agricultural service of the Colony.

Mr. Nowell's absence for a third of the year together with the absence on normal long leave of the heads of the Botanical Department, Government Farm and Veterinary Service, coupled with a large amount of extra work, made the Department very short-handed. I wish to express appreciation of the zeal with which every one worked under difficult, and, it is hoped, exceptional conditions.

REVENUE AND EXPENDITURE.

The expenditure, exclusive of Ground Provisions Depôt and Fruit Shop, was £30,347 0s. 2½d. and the revenue £14,405 12s. 2½d. making the net cost of the Department £15,961 8s. 0d.

PRINCIPAL CROPS.

The quantities and values of the chief agricultural exports during 1926 are detailed in Table II (p. 42). The following summary gives comparative figures for the last seven years (1920 being the last year of inflated values) of the three staples on which the welfare of the Colony so largely depends :—

	Cacao.		Sugar (1)		Coconuts (2) including Copra and Oil.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lb.	£	Tons.	£	No.	£
1920	62,741,172	3,226,215	46,149	2,802,352	38,677,914	415,672
1921	75,238,566	1,361,734	47,968	1,552,749	33,074,347	171,714
1922	50,645,635	1,196,166	50,054	1,196,650	46,932,515	171,793
1923	67,692,267	1,286,494	35,523	1,167,515	52,104,685	190,123
1924	56,402,755	1,165,816	43,423	1,321,417	45,351,339	222,764
1925	49,476,609	1,257,255	60,648	1,203,203	41,964,788	192,830
1926	50,057,881	1,270,335	65,680	1,109,408	50,343,619	206,771

(1) The quantity of sugar Exported is given, but under values those of the by-products of sugar exported are included, viz. : rum, molasses and bitters.

(2) Coconuts are exported as whole nuts, copra and oil. To obtain comparative figures of annual crops 1 lb. of copra is taken as equivalent to 3 nuts, and 1 gallon of oil to 45 nuts.

Agricultural returns are largely controlled by weather conditions and in 1926 these were not favourable, particularly to cacao in Trinidad. The dry season was exceptionally severe ; at St. Clair Experiment Station only 3·97 inches were recorded in the first five months compared with 11·28 inches the average of the preceding 65 years. June and July were also well below normal, and yet owing to excessive rains towards the end of the year the total was 68·58 or 5·24 inches above the average of the 65 year period. The effects are referred to below under Cacao. The sugar crop, in determining which the weather of 1925 played an important part, was the largest on record.

SUGAR.—The total crop reached the record of 73,561 tons. The dry season of 1925 was severe (but much less so than 1926) favouring the Froghopper pest (*Tomaspis saccharina*) in areas most liable to this trouble. Its effects were very considerably reduced by very favourable weather in the second half of 1925. The canes ripened well in the dry season of 1926, conditions for reaping were favourable and the result was a record crop, which would have been considerably larger still owing to the increase in the area under cane and the improvement in cultural operations on several estates, had it not been for the attacks of Froghopper. Trinidad fortunately is entirely or relatively free from several of the pests and diseases of cane which are serious in other parts of the world, the Froghopper being the worst trouble. A strong Committee was appointed by His Excellency the Governor, composed of representatives of all the chief sugar estates, the agricultural and commercial bodies, the Imperial College of Tropical Agriculture and the Department, with the Director of Agriculture as Chairman. It is provided with funds contributed in equal parts by the sugar estates and the Government. Active work has been carried on and results published. (*Minutes and Proceedings of the Froghopper Committee.*) The investigations are planned for a period of five years.

Considerable attention has been given to the improvement of cultural operations on several estates. Three employ Fowler's steam ploughs. On the largest property, that of the Ste. Madeleine Co., with very heavy undulating lands, motor tractors are being more extensively used. From a beginning with light tractors the Company has progressed to an outfit of some five (5 and 10-ton) Holt tractors. Estate roads and traces, usually grassed, are being improved by the use of graders, to be followed by mowing machines, to facilitate transport. The preparation of larger quantities of pen manure by improved methods is also being very seriously dealt with. Through the Froghopper Committee an extensive series of experiments were made with *Adco* manure and the use of various cover crops. All this work must be of great value as it is admitted on all sides that heavier applications of organic manures, &c., are necessary to improve and maintain the fertility of a large proportion of the sugar lands.

Canes are grown not only by the Estates but also by Cane Farmers who sell, usually on a sliding scale, to the Factories. The total crops and the proportions yielded by Estate and Farmers canes for the last five years are :—

Tons Sugar Made.

	From Estate Canes.	*From Farmers Canes.*		*Total.*
1926	39,489	34,072	(46 per cent.)	73,561
1925 ..	38,993	30,635	(44 per cent.)	69,629
1924	30,862	21,183	(41 per cent.)	41,619
1923	24,251	17,368	(42 per cent.)	59,948
1922	29,599	30,349	(51 per cent.)	54,933

The falling off in the proportion grown by Farmers during the years 1922-25 is in part due to the unrest amongst them following the years of inflated prices. Their grievances led to the appointment in 1924-25 by His Excellency the Governor of a Committee of representatives of Manufacturers and Farmers under the Chairmanship of the Director of Agriculture. The report of the Committee has been issued as a Council Paper (No. 70 of 1926.)

Work in breeding Trinidad Seedling canes, and the results of estate trials of those already distributed are summarized under Chemical Division (p. 20).

CACAO.—As shown in the table above, the cacao crop was very similar in both quantity and value to that of 1925, both approximately 50,000,000 lb. compared with 75,000,000 in the record crop of 1921. The drought of the early months was sufficiently severe to kill or seriously injure a large number of trees, especially those in poor condition accentuated by lack of attention during recent years of unremunerative prices. Drought and neglect favoured the activities of the cacao beetle, which did much more damage than in normal seasons. The long dry season also retarded flowering with the result that the pickings from October to December were very small, and in many districts were still further reduced by the black pod disease which, whilst normally more abundant about November to January, is always more prevalent if the rainfall at this season is excessive. It has also to be borne in mind that large areas of cacao have been felled to be replaced by cane and to a less extent by coconuts, that other areas are the scenes of actual or prospective oil operations, also that owing to low prices since 1921 there has not been the same inducement or means as formerly either to plant up new areas or to keep existing areas up to their proper standard. It is, therefore, not surprising that the crop was small, although a little in advance of that of 1925.

The increase of the cacao beetle occasioned considerable alarm and it was decided that a special temporary staff should be provided to enable a more intensive campaign against it to be undertaken in 1927.

COCONUTS.—This crop continues to increase in importance. The old established areas have been added to by the replacement of cacao and also cane in some districts, and by the planting up of new lands rendered accessible by road extension.

Coconut diseases are better understood as the outcome of work during the last few years. Red ring disease is now known to be caused by a nematode and the spread of the disease can be minimized by carefully following the control measures recommended, although it is not, and probably never will be, possible to cure the tree once well attacked.

The trade in whole nuts is now small, most of the exports being as copra, that of coconut oil is increasing. The total exports for the last seven years are given in the summary table above (p. 5).

COFFEE.—This minor industry has made rapid progress during the last four years, the exports which were less than 2,000 lb. in 1923, jumped to over 500,000 lb. in 1924 and nearly 600,000 in 1925. The recent very dry seasons checked fruit setting and the crop for 1926 fell slightly to 497,688 lb.

Planting continues actively as indicated in the Botanical Department report. The kinds principally grown are *C. arabica*, *robusta* and *excelsa*.

FRUIT.—Attention has continued to be given to the development of an export trade in fruit. The valuable report of the Imperial Economic Committee, issued during the year, indicated that owing to the season for West Indian oranges coinciding with that of the enormous Mediterranean crop the prospects for establishing an important orange trade with the United Kingdom were not encouraging. There remain possibilities with Canada and Bermuda although the length of the voyage from the southern colonies handicaps them compared with those further north.

With grape fruit the case is different. West Indian and South African fruit come in at different seasons and there is thus a more favourable opportunity for the Colony to take part in this rapidly developing trade. The first necessity is obviously an adequate supply of fruit of commercial standard varieties. The Department has been working towards this end for the last twelve years. In 1914 it obtained six of the best commercial varieties from Cuba, viz.: Marsh Seedless, Walters, Duncan, Conner's Prolific, Bowen's Late, Pernambuco. These have

been tried and the most promising, principally Marsh Seedless propagated by budding. The interest taken by the planting community is indicated by the sales of budded citrus plants (chiefly grape fruit) from the Department's nurseries from 1912-1926, grouped in 5-year periods

1912-16	....	....	....	2,103
1917-21	....	....	....	3,524
1922-26	....	....	....	16,380

Large orders have been received for 1927.

To serve as experiment plots to test the possibilities of representative districts, to obtain information about cultivation, handling, yields, &c. and to serve as sources of supply of budwood from selected trees, the Department established from about 4 years ago, two acres in Citrus fruits at St. Augustine Experiment Station and about thirty at River Estate.

Some interest has also been taken in pineapples and the Department has at St. Augustine, River and St. Clair plots of the best local varieties, and others introduced by the kind assistance of the United Fruit Co., from Costa Rica. At St. Augustine data is being collected of results under estate conditions for publication as soon as sufficiently complete.

It was hoped in the early part of the year that a trade in the Governor (Canary) banana might be re-established, but nothing practical resulted. Failing such a trade it is essential to find a satisfactory substitute for the Gros Michel (Jamaica) banana immune or highly resistant to Panama disease. Co-operation with the Imperial College of Tropical Agriculture has been obtained by means of an informal Committee, and proposals made for a full scheme of research centred at the Imperial College, with the help of the Empire Marketing Board.

Towards the end of the year further steps were taken to found a Fruit Grower's Association which it is expected will lead to useful results.

RUBBER.—Para rubber thrives and is not subject to any serious troubles. The exports continue to increase, 163,399 lb. valued at £19,251 in 1926 compared with 110,625 lb. valued at £9,529 in 1925.

LIMES.—Withertip disease which has also proved destructive in other West Indian colonies caused, a few years ago, a heavy set back to this, then very promising, minor industry. Spraying and similar measures being unlikely to be economically practical under West Indian estate conditions the Department has directed its main efforts to endeavouring to secure an immune or resistant species or variety capable of replacing commercially the ordinary lime. From seeds from the Philippines and elsewhere fruiting plants have been obtained. The most promising have now been crossed with the West Indian Lime. (*See* also p. 11.)

AGRICULTURAL PROGRESS OF TOBAGO.

All the exports of Tobago, go in the first instance, to Trinidad; the principal—cacao, coconut, &c., are then sent out of the Colony and are included in the general exports; others, *e.g.*: vegetables, fruit and live stock, find a market in Trinidad. In 1926, the total value of the exports from Tobago was £100,763, an increase of nearly £21,000 over 1925, the increase was mainly due to greater production. The progress made in the last approximately thirty years is shown below:

	1897	**1926**
	£	£
Cacao	1,671	57,854
Sugar and Molasses	4,120	Nil.
Coconuts, Copra and Oil ..	776	25,237
Vegetables and Fruit	151	3,954
Rubber	Nil.	827
Live Stock	7,694	12,874

Miscellaneous items bring the comparative totals to £14,503 and £100,763.

AGRICULTURAL CREDIT SOCIETIES.

Three new Societies were registered during the year, and one cancelled making the number in operation thirty-four. About two-thirds of the societies are composed of cane farmers all except one of these societies are on the Ste. Madeleine Sugar Co.'s estates and have been supervised as usual through the central office established and maintained by the Company. The remainder—mostly in Tobago—are composed of small proprietors, principally cultivators of cacao, but also of minor crops. Shortage of staff and pressure of other work prevented me as Registrar from attending the Annual General meetings of the societies. This was unfortunate as the tour affords a useful opportunity of getting into practical touch with these representative bodies of peasant cultivators. Mr. Davies, the Agricultural Adviser in Tobago, continued as Central Accountant, and in many other ways, his useful work in assisting this group. Mr. Salomon, Chief Clerk and Inspector of Credit Societies, also paid them visits of inspection and help.

AGRICULTURAL BANK.

Although no part of the Department, reference should be made to the Agricultural Bank. Established during 1925 it had by the end of 1926 advanced £121,760 as loans on 196 properties and £6,289 was also lent during the year as temporary advances. The Bank assists both large and small cultivators; of the 1926 loans no less than 123 out of 196 were made on properties of not more than 50 acres in area.

The Department is able to help the work of the Bank materially. The Assistant Director has served as a member of the Board of Management. The properties on which loans are made are inspected regularly by officers of the Department and steps taken when necessary to remedy cultural and other defects.

The Bank, in fact, is becoming a very useful means of helping to improve the agricultural practice of the Colony, as it is possible to take steps to ensure that advice given is put into practice.

BOTANICAL DEPARTMENT—TRINIDAD.

Royal Botanic Gardens.

ROADS.—Very heavy rains in August, September and October necessitated constant attention to roads, drains and culverts. Considerable repairs were made with the daily help of a prison gang, the warders being paid from the maintenance vote. The numbers in the gang dwindled towards the end of the year.

LAWNS.—Mole crickets again gave much trouble throughout the dry season, but the lawns recovered during the rainy weather. Of the various grasses tried in the endeavour to find one immune to the mole cricket, the following results were noticed :

Java grass (*Polytrias praemorsa*). This grass continued to be somewhat affected by mole crickets, and under lawn conditions as a pure growth it was not wholly satisfactory.

Paspalum notatum is promising, but of rather too coarse a habit to make an ideal lawn grass.

Kikuyu grass, failed to establish itself when planted in a lawn, the heavy rains proving fatal to it.

The mole cricket epidemic is at its worst in the parts of the lawns which get most worn by the general public, children playing, &c. This, and the long number of years in which these parts of the gardens have been under grass, tend to show that cultivation, replanting and manuring is required in the worst spots. It is noticeable that when a badly riddled portion is dug over and returfed, the grass is more vigorous and consequently more resistant. No funds are, however, available for work of this nature.

Another trouble on the lawns, noticed for the first time this year as a serious pest, was Chinch bug. It did considerable damage, but was at last kept in check by using an emulsion of soft soap and nicotine.

GUIDE BOOK.—A popular, illustrated guide to the Botanic Gardens was prepared and placed with the Government Printer. It is hoped it will be of use and interest to both residents and tourists.

ORCHIDS.—The stock of native kinds has been considerably extended. Rough wooden structures on which to grow some of the hardy kinds have been formed near the Hevea tree and in the rockery west of the bandstand. They were covered temporarily with Indian Balsams which make a bright show.

LABELS.—A new supply of metal labels was received and put out.

ST. CLAIR EXPERIMENT STATION.

As usual the main work has been in the plant nursery and the steady increase in output has been maintained.

	No. of Plants.	*Revenue.* £	s.	d.
1923 ..	45,809	687	9	1½
1924 ..	61,728	1,027	2	1½
1925 ..	109,745	1,182	3	0
1926 ..	123,482	1,289	12	7½

This has been achieved with an increase of only £50 in the labour vote. A further increase in the vote is required if the revenue from this source is to expand. The orders for 1927 received before the close of the year were as many as can be undertaken under the present vote, and it is feared that the station may not be able to meet all demands for plants in 1927 owing to lack of funds.

It is desirable to extend largely the Citrus nurseries and grow the plants for a longer term before sending out, but this cannot be done with the present resources.

The details of plants sent out for 1926 are :

CACAO	Seedlings	47,902		
	Budded	569	48,471	
COFFEE	Robusta	24,852		
	Excelsa	17,377		
	Arabica	6,860		
	Canephora	2,500		
	Golden Drop	1,000	52,589	
FRUIT	Citrus budded	4,598		
	Mangoes grafted	1,817		
	Avocado budded	723		
	Pineapples	172		
	Limes	2,484		
	Miscellaneous	2,147	11,941	
	Timber trees		738	
	Other economic plants		217	
	Decorative plants		9,626	
			123,482	
	Cuttings, Elephant grass		100,750	
	Do. miscellaneous		2,775	
	Budwood (Citrus)		479	pieces.
	Seeds countable		13,350	
	Seeds		177½	lb.
	Seeds		277	pkts.
	Produce		630	lb.
	Do.		58	heads.
	Fruits		5,659	

The Hevea trees were tapped during most of the wet season, the yield was 540 lb. biscuit and 70 lb. scrap rubber.

THE ELEPHANT GRASS plot has grown well. It was chiefly used for supplying plants to estates and also for fodder purposes.

GIANT BANANA PLOTS.—The dry season caused these to suffer severely; 38 bunches were reaped apart from 11 unsaleable bunches which fell before maturity.

It has been decided to keep the plots going as a nursery for suckers, and pruning of the plants has therefore ceased.

CHAULMOOGRA OIL PLANTS.—All plants of those recorded in last year's report have made good progress, and two plants of *Hydnocarpus Wightiana* received from the Panama Canal Zone have been planted in the Botanic Gardens. Four consignments of seeds were received during the year, viz :—

Hydnocarpus Wightiana—from Cochin State, S. India.
H. anthelmintica from Chiengmai, Siam.
H. "Marcotti" (*H. venenata*?) from the Surgeon-General.
H. Wightiana from the Royal Botanic Gardens, Calcutta.

The latter was the only consignment that reached Trinidad in viable condition and about 65 plants were raised which are growing well. The seeds were packed in three ways and the percentage of germination was as follows: "A" treated with CO^2 gas, 0 per cent. "B." in charcoal but no gas, 3 per cent. "C" in soil and charcoal, 8 per cent.

DERRIS ELLIPTICA.—These plants have grown well and have proved amenable to propagation by cuttings.

CITRUS PLOTS.—The trees have made excellent growth and cropped well. These are chiefly utilized as a source of budwood for propagation purposes.

LIMES.—Two of the plants of Kusai Lime presented by Professor Ashby have flowered. The trees are apparently very susceptible to scab disease.

Three plants of Burma Lime presented by the Imperial College of Tropical Agriculture have been added to the Lime collections.

The progeny raised from crosses between *Citrus aurantifolia*, Citrus "Everglade" and the common West Indian Lime, as recorded last year have grown well. Those resulting from the cross between *C. aurantifolia* and "Everglade" show little variation in leaf character, most of them have already flowered and a few fruited. No withertip has been observed on these. The progeny of the cross between West Indian Lime and *C. aurantifolia* show considerable variation in leaf character and have not yet flowered; seven have contracted withertip disease.

MANGOSTEEN.—Experiments with inarching the Mangosteen on to other species of *Garcinia* have given the following results :—

Mangosteen grafted on to *G. tinctoria* 1 grew, 1 failed.
Do. do. *G. xanthochymus* 1 grew 1 failed.
Do. do. *G. spicata* 3 failed.
Do. do. *G. Livingstonei* 2 failed.
Do. do. *G. Morella* 1 failed.

Experiments with patch budding on all the above species also failed.

The plants of the species of *Garcinia* for trial as stocks were presented by the United States Department of Agriculture and one of each has been planted in the Botanic Gardens.

BEAUMONTIA.—This was successfully propagated by root cuttings.

BOUGAINVILLAEA SPECTABILIS VAR LATERITIA.—A number of layers were taken off during the year and it was found that the percentage of successes was greater when the mature branches were used.

STABLE.—A new stable and cart shed was erected by the Public Works Department.

HERBARIUM.

The main work of this section has been the continuation of the "Flora of Trinidad and Tobago." Mr. R. O. Williams, the Superintendent and Assistant Botanist, was engaged for two months at Kew Herbarium and the British Museum in undertaking a revision of the manuscript prepared by Professor E. E. Cheeseman, B.Sc. and himself.

The cohorts Ranales and Rubiales are now ready for publication and it is recommended that the flora be published in parts of about 16 pages under Bentham and Hooker's system. The material now ready is therefore sufficient for one part of Vol. I and two parts of Vol. II.

A large amount of work was done for the Forestry Department in drying and determining material sent in by its collectors. A total of 350 sheets were dried and determined and there is still a considerable quantity on hand to be dealt with as time permits.

The Department is again indebted to the Directors of Kew and the New York Botanical Gardens for determinations of specimens sent to them.

Collecting has been carried on as time and opportunity permitted and a large number of sheets have been systematically arranged in the cabinets.

TOBAGO.

BOTANIC STATION.—A portion of the old Cacao plot was cut down and grape fruit and pineapples substituted. This, together with the plot of Julie mangoes put in last year, should serve as a useful demonstration of fruit cultivation in which more interest is now being taken. The greater demand for budded and grafted fruit trees caused some increase in the revenue.

The Leeward District Agricultural Society paid a visit during the year.

GOVERNMENT HOUSE GROUNDS.—Some improvement was effected in beds and lawns. The timber plots (Mahogany and Cedar) have made satisfactory progress.

MISCELLANEOUS.—Another campaign against bird vine in the Scarborough neighbourhood was carried on with useful results. Spare shrubs, &c., were planted out at the Hospital and Public Works yard.

ST. AUGUSTINE EXPERIMENT STATION.

The principal work continues to be the raising of new Trinidad seedling canes and the study of problems in connection with cane cultivation; in particular increased attention has been given to the use of cover crops. The determination of the economic value in this Colony of some other crops is still under trial.

SUGAR CANE.

AVERAGE YIELD.—60·95 acres yielded 1,394 tons 11 cwts. 2 qrs. an average of 22·88 tons per acre : particulars are given below :—

Age of Cane.	Average.	Yield.			
		Tons.	Total. Cwts.	Qrs.	Average Tons.
Plants	19.94	527	7	2	26.40
1st Ratoons	27.88	688	11	2	24.70
2nd Ratoons	10.56	135	11	1	12.83
3rd Ratoons	2.57	43	1	1	16.75
Totals	60.95	1,394	11	2	22.88

The 2·5-acre field which last year gave the highest yield per acre as plant canes, has this year as 1st Ratoons yielded higher than any other field, with 37·33 tons per acre. B.H. 10 (12) has again given the heaviest yield of an individual cane 47.76 tons per acre from a plot of plant canes slightly less than one-seventh of an acre.

PLANTING EXPERIMENTS.—The test of different methods of planting cane, started in 1923 by planting Ba. 6032 and B.H. 10 (12) in five different ways, in plots of a quarter acre each, was continued. Reaped this year as first ratoons, the plots in which pen manure was applied at the time of planting again show an increase, though far less marked than last year ; over the control plots of 5·45 per cent. in Ba. 6032 and 11·4 per cent. in B.H. 10 (12) as against 21·5 and 38·6 per cent. respectively in 1925, the two crops. plants and 1st ratoons show an average increase of 26·65 per cent. in Ba. 6032 and 32·72 per cent. in B.H. 10 (12).

Two Varieties—Five-quarter acre plots of each.

Method of Planting.	Yield per Acre					
	Ba. 6032.			B.H. 10(12).		
	Plants.	1st Ratoons.	Average 2 crops.	Plants.	1st Ratoons.	Average 2 crops.
Drills 7 feet by 2 feet	55.45	35.40	45.42	48.19	40.95	44.57
Do. 5 feet by 5 feet Pen manure applied at time of planting ..	57.86	36.17	47.01	58.00	43.45	50.72
Do. 5 feet by 5 feet S. potatoes on banks. Pen manure applied when potatoes dug ..	43.30	34.30	38.80	37.40	39.00	38.20
Cane holes 5 feet by 5 feet Pen manure applied between stools at time of planting	49.30	37.50	43.40	50.40	40·90	45.65
Drills 5 feet by 5 feet well rotted Pen manure ploughed in before planting	47.40	28.94	38.17	45.70	32.83	39.26
Totals	50.48	34.42	42.41	47.86	39.38	43.62

FROGHOPPER EXPERIMENT.—The slight froghopper attack which occurred in 1925, in the fertilized plots of the experiment (commenced in 1924) to determine the effect of yearly applications of nitrogenous fertilizers on froghopper attacks, does not appear to have seriously affected the subsequent crop reaped this year, the nitrate of soda plot having yielded an increase of ·55 tons and the sulphate of ammonia plot 5·23 tons over their respective control plots : These plots were

more severely attacked by froghoppers this year, the control plots remaining as in the previous year practically untouched.

Froghopper Manurial Experiment Yield per Acre.

	Age of Cane.	Area 22,704 Sq. Ft.			Area 22,972 Sq. Ft.		
		Sodium Nitrate tons.	Control tons.	Difference + or − tons.	Ammonium Sulphate tons.	Control tons.	Difference + or − tons.
B. 156	1925 Plants ..	40.24	41.56	− 1.32	41.54	39 24	+2.30
Do.	1926 1st Ratoons ..	27.81	27.26	+ .55	33.75	28.52	+5.23
Do.	Average 2 Crops ..	34.02	34.41	− .39	37.64	33.88	+3.76

Whale Meal Manurial Experiment.—In 1925 Whale Meal was applied at the rate of 300 lb. per acre to quarter acre plots of 1st ratoons of four varieties of cane, reaped this year, all except one, showed an increased yield varying from 1·3 to 2 tons per acre over the unmanured plots.

WHALE MEAL MANURIAL EXPERIMENT.

Area of Plots 10,560 Sq. ft.

Plot.	Tons per Acre.				
	B.H. 10 (12)	Ba. 6032.	Ba. 11569	Q. Badilla	Remarks.
Whale Meal ..	42.32	34.64	40.06	34.26	
Control	42.39	33.32	38.35	32.27	
Difference	− .07	+ 1.32	+ 1.71	+ 2.01	

"Bitumul" Paper Mulch Experiment.—An increase of over 7 tons per acre was recorded from the mulched plots, but the cost of the material renders its use in the Colony prohibitive.

"Bitumul" Paper Mulch Experiment.

Plot.	T. 929.		T. 1124.	
	Area—Sq. ft.	Tons.	Area—Sq. ft.	Tons.
Paper Mulch	550	28.71	330	49.50
Control	550	20.79	330	47.85
Remainder of Plot	1,100	21.28	1,540	41.00
Total Unmulched	1,650	21.12	1,870	42.22

Ground Limestone.—The Ground Limestone appears to have greatly stimulated the growth of the canes in the field of 5·38 acres to which it was applied in 1925.

An extension of the draining experiment to embrace an undrained area of 2·7 acres in comparison with a similar area drained at 44 feet apart; testing the value as a fertilizer of H.O.P. Compound Fish Manure, and a distance planting experiment, are in progress but the results are not yet available.

New Trinidad Seedlings.—1,118 seedlings raised in 1925 were planted out in March-April. Seed was collected from twenty varieties, fourteen of which germinated, of these B. 6835 and Bourbon germinated very freely being responsible for 4080 of the 6545 plantlets pricked off by the end of the year, B. 6388, T. 519

and Ba 11569 also germinated well yielding 2040 plantlets, the other parent canes were T. 455, B.H. 10 (12), Ba. 6032, D. 625, B. 347, D. 109, H. 27, L. 511, B. 6308.

Seedling Canes raised in 1926.

Variety.	No. of Boxes.		No. of Plants pricked off.
	Sown.	Germinated.	
P.O.J. 2725	2	—	—
Bourbon	9	6	1,200
T. 455	2	2	120
T. 519	6	2	720
B. 6835	11	11	2,880
Ba. 6032	5	5	80
Ba. 11569	7	4	480
B. 6388	3	3	840
D. 109	5	2	—
B. 347	7	3	45
B.H. 10 (12)	6	5	120
D. 116	1	—	—
S.C. 12/4	1	—	—
B. 156	1	—	—
D. 625	1	1	60
H. 27	1	1	—
B. 6450	1	—	—
L. 511	2	2	—
B. 6308	4	2	—
H. ?	6	—	—
	81	49	6,545

Selection on field characters and chemical test of seedlings previously raised resulted in 2, 9, 8, 43, 87, 16 and 103 of the seedlings raised respectively in 1917, 1918, 1919, 1920,1921, 1922 and 1923 being retained for further trial, in addition a first selection of 292 was made from seedlings raised in 1924. The number of sugar-cane samples sent to be tested amounted to 1,912. Five selections, one of the 1919, and two each of the 1920 and 1921 seedlings were distributed to sugar estates for trial, and 8,310 plants were divided amongst 10 estates and the Imperial College of Tropical Agriculture. Visits were paid to the sugar-cane estates to which plants have been distributed in 1923 and 1925, three out of the thirteen varieties shewed good promise in growth and general appearance, one each of the 1919, 1920 and 1921 seedlings. A joint full report by the Agricultural Chemist and the Manager of the station has been prepared.

Mosaic Disease.—The weekly " Rogueing " has been continued, resulting in the destruction of 90 stools on 72·35 acres, containing 137,152 stools, an infection of only 0·065 per cent. showing a decrease on the previous year of 0·01 per cent.

Mosaic Disease, 1926.

Field No.	Acreage.	No. of Stools.	No. of Stools Attacked.	% Attacked.	Field No.	Acreage.	No. of Stools.	No. of Stools. Attacked.	% Attacked.
1	4·22	6,572	3	·044	B. Ford.	27·20	49,404	32	
2	1·98	3,168	—	—	12	8·85	17,700	27	·152
3	2·06	3,296	1	·031	13	8·70	13,920	7	·050
4	1·50	3,000	1	·033	16	6·72	11,952	10	·083
5	·40	760	—	—	17	5·58	12,276	2	·016
8	2·13	3,786	15	·396	18	2·45	5,390	3	·055
9	2·96	6,512	8	·123	19	8·80	17,600	2	·011
10	3·34	7,348	3	·041	20	4·05	8,910	7	·078
11	8·61	14,782	1	·006					
C. Ford.	27·20	49,404	32		Total	72.35	137,152	90	.065

OTHER CROPS.

The usual care and attention was given to all the plots.

HEVEA RUBBER.—The average girth has increased to 36·1 inches, an average increase for the year of ·70 inches. The method of tapping by the quarter-cut, nine inches from the ground, has been continued but both series P. and R. have been tapped every second day instead of every second and fourth day respectively as in the previous year, during the six months July to December the trees in P. which have a greater average girth than R. yielded 1 lb. 7·8 oz. and in R. 1 lb. 1·02 oz. of dry rubber per tree.

Return of Hevea Rubber from 1st July to 31st December, 1926.

Section and Period of Tapping.	No. of Trees.	Rubber.		Average per Tree.			Dry Rubber.		
		Latex C.C.	Scrap Grams.	Latex C.C.	Grams.	Girth.	Increased Girth.	Plot lb.	Per tree lb.
P. Every 2nd Day ..	23	30,920	1430·590	1344·30	62·199	36·10	·70	34·25	1·49
R Do. do. ..	47	44,120	2044·740	938·72	43·505			47·75	1·01

CACAO.—An increase of 34 per cent. in the general crop has to be recorded, but the Budded Cacao plot yielded 8·5 per cent. less than last year owing to the loss of 33 trees by drought aggravated by their close proximity to Camphor trees.

CAMPHOR.—No supplying was done in the wind-break along the Southern main road of which 50 per cent. of the trees planted in 1925 have died, but in order to obtain stronger plants, which will it is hoped thrive better, the plants raised from seed during 1925 have been retained in the pots for supplying next season. Four trees fruited and yielded 2,477 seed.

CITRUS PLOT.—The growth of the trees continues to be good, but the Washington Navel Oranges are still backward, the trees being three years old this year fruit was allowed to ripen. Reaping commenced in October and by the end of the year 117 oranges and 283 grape fruit had been reaped, the Washington Navel Oranges, however, were "Corky" and juiceless and the other oranges quite tasteless. The infestation of several trees with scale insects recurred in the dry season and spraying was resorted to, to keep them in check.

BANANAS.—The total crop reaped was 3,523 bunches, 2,877 of these represents the yield during nine months from ten acres of Governor bananas before they were thrown out of cultivation in September, showing that 64·2 per cent. of the trees bore fruit, one acre of Governor bananas in this same field which is still being retained under cultivation, yielded 206 bunches in six months (July to December) equal to 46·8 per cent. of bearing trees; reaping from the acre of Giant bananas planted in 1925 commenced in April and by the end of the year 209 bunches had been reaped showing that 58 per cent. bore fruit. The percentage of nine hand bunches remains very low ·28 per cent. for Governor and ·48 for Giant, for eight hands it was also low being 2·85 per cent. for Governor and 11 per cent. for Giant, while seven hands gave 16 and 36.8 per cent. for Governor and Giant respectively.

Eight cases of disease resembling Panama in Giant bananas, were discovered during the first three months of the year, four affected stools were kept under observation after the diseased stem had been dug out, but no further sign of disease was observed in the suckers up to the end of the year, three other stools developed a splitting of the stem and were kept under observation, the trouble appears to persist in the suckers.

Diseased Giant Bananas in 1926.

Date 1926.	No. of Stools.	Disease.	Treatment.	Results of Observation.
January 13	1	Resembles Panama	Diseased stem dug out ..	Suckers still healthy Dec. 31st
28	2	Splitting Stem ..	Split stem dug out ..	Suckers weak Dec. 31st.
28	2	Resembles Panama	Destroyed	
28	1	Do. do.	Diseased stem dug out ..	Suckers still healthy Dec. 31st.
February 13	2	Do. do.	Do. do. ..	One still healthy, one doubtful Dec. 31st.
28	1	Splitting Stem ..	Split stem dug out ..	Suckers weak Dec. 31st.
March 6	1	Resembles Panama	Diseased stem dug out ..	Suckers still healthy Dec. 31st.
6	1	Do. do.	Destroyed	
November 26	1	Splitting stem ..	Split stem dug out	

No improvement either in the number or weight of bunches has been recorded from the application of Whale Meal Manure made in 1925, a trial of H. O. P. Fish Manure was started this year the results of which are not yet available.

Whale Meal Manure Experiment with Governor Bananas.

Average weight of bunches in lb.

Plot.	Date Applied.	Amount per Acre.	Weight of Bunches: Hands.					
			4	5	6	7	8	9
Whale Meal ..	25 9 25	3 cwt.	14·96	17·54	20·28	28·78	—	—
Control	—	—	12·64	16·73	21·53	30·	25	—
Difference +or–	—	—	+2·32	+.81	–1·25	–1·22	—	—

Cotton.—An average crop of 185 lb. of lint per acre was reaped from the Sea Island cotton plot, the crop would have been well above the average but an attack of leaf rust late in the season interfered with boll development. The Cauto cotton plot which was ratooned for the second time yielded 327 lb. of lint per acre, the highest yield of the three crops, the average for which is 174 lb. of lint per acre.

Yield per acre of Sea Island Cotton.

Nine plots of continuous and eight plots of Spaced planted in rows 4 feet apart. Area 36,080 square feet. Total yield of seed cotton 549 lb. 662·81 lb. per acre at 28 per cent. Lint 185·5 lb. lint.

	20 Inches.		24 Inches.		30 Inches.		Total.	
	Seed Cotton lb.	Lint 28% lb.	Seed Cotton. lb.	Lint 28% lb.	Seed Cotton lb.	Lint 28% lb.	Seed Cotton lb.	Lint 28% lb.
Continuous rows thinned to ..	678·85	190·06	675·32	189·08	663·30	185·68	672·28	188·21
spaced at ..	693·	194·04	622·28	174·21	653·40	182·95	652·38	182.64
Difference	–14·15	3·98	53·04	14·87	9·90	2·73	19·90	5·57

Cauto Cotton.

	Plants, 1924.		1st Ratoons, 1925.		2nd Ratoons, 1926.		Average of 3 Crops.	
	Seed Cotton lb.	Lint 28% lb.	Seed Cotton lb.	Lint 28% lb.	Seed Cotton lb.	Lint 28% lb.	Seed Cotton lb.	Lint 28% lb.
Planted 7 ft. by 7 ft	296·33	82·97	404·08	113·14	1168·20	327·09	622·87	174·40
	1926.							
	440·55	123·35						

Pigeon Peas.—From the sixty progeny rows planted the previous year 766 trees, which fulfilled the requirements aimed at, ripening all their pods together, were reaped separately. From these 29 which yielded not less than 12 oz. of seed were selected for replanting in progeny rows, and seed from the four best rows was used for planting increase plots. The Hawaiian pigeon peas yielded a crop of 433 lb. to the acre, and sufficient seed was secured from the Indian dwarf pigeon pea "*Arahar*" to plant a much larger plot.

Pine-apples.—During the nine months April to December 1,049 fruit of Black Antigua and Sugar Loaf were reaped, a percentage of 24·53 of bearing plants, 50·62 per cent. of these were good sound fruit, 13·25 were diseased or insect attacked and 36·13 per cent. damaged or misshapen.

The Chocona pines planted in April, 1925, commenced to ripen fruit in November, yielding 45 fruit by the end of the year, 57·78 per cent. of which were sound, the remainder being either diseased or damaged. The Red Spanish did not ripen any fruit. The cultivation was extended by planting 2,100 Black Antigua and 1,221 Sugar Loaf.

Yield of Pine Apples, 1926.

Variety.	No. of Plants.	Dates.	Yield.				Per cent.			
			Good.	Diseased.	Damaged	Total.	Good.	Diseased.	Damaged	Plants bearing fruit.
Black Antigua ..	3,024	13 4 26 to 20 12 26	316	97	265	678	40·31	14·31	39·08	22·42
Sugar Loaf.. ..	1,252	30 4 26 to 20 12 26	215	42	114	371	57·95	11·32	30·73	29·63
Total	4,276	April-Dec.	531	139	379	1,049	50·62	13·25	36·13	24·53
Chocona		5 11 26 to 14 12 26	26	11	8	45	57·78	24·44	17·78	9·45
Grand Total ..	4,752		557	150	387	1,094	50·91	13·71	35·38	23·02

Cover Crops.—Four varieties of *Stizolobium*, three of Velvet beans, an Indian wild Indigo, and *Tephrosia purpurea* were added to the list of cover crops under trial, none of the new *Stizolobium* or velvet beans equalled the *Stizolobium atterrimum* as a thick lasting cover. *Tephrosia purpurea*, a dwarf variety, promises to make a very effective long time cover; no other crop equalled Sunn Hemp *Crotalaria juncea*, as a medium time quick growing thick cover; *Crotalaria striata* broadcasted failed entirely, but planted in drills 2 feet apart in September and weeded once formed an excellent thick cover. Late in the year seed of *Crotalaria usaramoensis*, a very promising variety, *Indigofera hirsuta*, and

Colopogonium mucunoides were received from Ceylon and the Federated Malay States and planted for seed purposes : Seed of *Crotalaria retusa* and wild Indigo found growing wild were collected for trial.

Miscellaneous.—Besides the usual crops of Yams, Rice, Cassava, Ground Nuts and Tobacco, plots of Jute, Millet, Soya bean and a Venezuelan black bean were planted ; on account of late planting the Jute only yielded seed, the Millet failed entirely and the others produced seed for extended plantings next season.

Diseases and Insect Pests.—Mosaic disease continues to be kept well under control. A more severe Froghopper attack than the previous year occurred in the same restricted experimental area. A somewhat severe attack on cane leaves by the stripped cane looper caterpillar (*Mocis ripanda*) occurred in July, weeding and trashing, assisted no doubt by natural enemies, quickly checked the attack. Spraying with resin wash has failed to control entirely scale insects on citrus trees, the infestation recurring, particularly in the dry season. Cacao beetles have increased and have been responsible for the death of a few trees. Pineapples suffered only slightly from fruit-rot or fruit-spot, but the fruit was attacked with some severity by the caterpillar of a moth. The appearance of white leaf spot late in the year, indicating the presence of the fungus *Thielaviopsis paradoxa*, will necessitate the spraying of the plants with Bordeaux mixture. Pigeon peas were attacked by an insect pest or disease, the nature of which has not yet been determined, cotton plants were again attacked late in the year by a leaf rust, which will probably result in a reduction of the crop.

General.—The leakage of stored seed and produce owing to the want of a proper store room leads not only to loss of revenue by the opportunities afforded to dishonest labourers and other persons, but also to carelessness on the part of subordinates, the loss or mislaying of any article being invariably ascribed to this cause, rendering it very difficult, frequently impossible, for the Manager to trace the missing article, or fix the responsibility for its loss. As already reported a minimum of 3,000 lb. of yams and 31 parcels of selected rice seeds weighing 495 lb. were lost this year ; this latter loss, which interferes materially with several years work on the comparative yield of varieties of rice and the selection of seed for the purpose of increasing the yield, alone renders it imperative, if experimental work is not to suffer, that a proper store room should be provided. Trespassers continue to give trouble, the conviction of two out of the four arrested was secured, praedial larceny chiefly of canes and bananas is also prevalent, but no conviction followed on the one arrest made. The thanks of the department are due to the authorities of the following estates for their assistance in supplying cane seed. La Fortune, Ste. Madeleine Co., Orange Grove, Forres Park, Caroni and Brechin Castle.

The usual facilities for research work and demonstrations to students have been extended to the Imperial College of Tropical Agriculture.

Owing to the canes having realized only $3.45 instead of the estimated $4.00 a ton, and the sale of the cotton and rubber crops not having been effected by the end of the year, the actual revenue collected fell short of the estimate by £153 1s. 5d.

Expenditure.

	£	s.	d.
Personal Emoluments	372	0	0
Wages of Extra Employees			
Cultivation "Cane and Other Crops"	1,648	2	5
Yam Cultivation	56	9	10
Maintenance	395	8	1½
Travelling	5	4	9
Materials	174	17	11
Stock	299	18	10
	£2,952	1	10½

Revenue.

	£	s.	d.
Cane and Cane Plants	945	18	11½
Bananas	109	16	0
Yams	61	0	8½
Peas and Beans	5	18	5½
Pine Apples and Pine Apple plants	36	14	0
Rice Paddy	12	16	4½
Citrus Fruits	1	5	6
Cotton Seed	3	4	9
Cacao	8	0	8½
Cassava	2	10	6½
Rubber	3	2	6
Camphor Plants	3	9	2
Miscellaneous	53	0	11
	£1,246	18	7

CHEMICAL DIVISION.

SUGAR.—The sugar-cane analytical work was carried out at the Government Farm, 1,822 samples being tested, compared with 1,492 and 1,216 in 1925 and 1924, respectively. Plots of the most promising of the Trinidad Seedlings raised in 1917 were tested for the sixth time as plant canes and for the fifth and fourth time as first and second ratoons. Three only out of this lot, viz. : T. 301, T. 455 and T. 487 have been replanted at the St. Augustine Experiment Station for reaping in 1928. Results from the seedlings raised in 1918 have been obtained from the past five crops as plant canes and from four and three crops as first and second ratoons. The best canes of this series are T. 617, T. 608 and T. 650. They have given at St. Augustine, an average yield of 3·58, 3·53 and 3·46 tons of sucrose per acre per annum for twelve crops (5 of plant canes, 4 of first ratoons and 3 of second ratoons) as against 4·11, 3·05 and 2·79 tons per acre for B.H. 10(12), B. 156 and Ba. 6032 respectively. T. 718 gave the best results during the first three years but fell to an average of 2·66 tons for the twelve crops. It is, however, a promising cane on several of the Estates, on which it is under trial, as will be seen later. Results from the 1919 seedlings have been obtained from the past four crops as plant canes and from three and two crops as first and second ratoons. The most promising of these are T. 1022, T. 909 and T. 917 with an average yield of 3·92, 3·39 and 3·35 tons of sucrose per acre per annum for nine crops (4 of plant canes, 3 of first and 2 of second ratoons) as against 3·98, 3·00 and 2·91 tons per acre for B.H. 10 (12), B. 156 and Ba. 6032 respectively. Results of the 1920 seedlings have been obtained during the past three years as plant canes ; during 1925 and 1926 as first ratoons and during 1926 as second ratoons. There are several very promising canes among this lot, the best being T. 1198, with an average of 4·39 tons of sucrose per acre for six crops as against 4·36 tons per acre for B.H. 10 (12), T. 1188, T. 1113, T. 1189, T. 1353 and T. 1429 have given 4·27, 4·04, 3·97, 3·90 and 3·83 tons of sucrose per acre for the same period as against 3·33 and 2·93 tons for Ba. 6032 and B. 156 respectively. Results of the 1921 seedlings have also been obtained during 1925 and 1926 from plots of plant canes and in 1926 from plots of first ratoons. T. 2110 has given the best results, viz. : 4·62 tons of sucrose as against 4·39 tons per acre for B. 156, the best of the standard varieties. The following six varieties, viz. : T. 1891, T. 1893, T. 2009, T. 1813 and T. 1999 have given from 4·20 to 4·37 tons of sucrose as against 4·07 tons per acre for B.H. 10 (12). Comparatively few seedlings were raised in 1922, they were grown in plots for the first time and the juice tested in April, 1926. T. 2392 has given the best yield, viz. : 56·92 tons of cane with an indicated yield of sucrose of 7·60 tons per acre as against 57·75 tons of cane containing 7·00 tons of sucrose per acre for B.H. 10 (12). T. 2399, T. 2370 and T. 2414 have given from 34·65 to 39.60 tons of cane containing from 4·38 to 4·77 tons of sucrose as against 48·67 and 29·70 tons of cane containing 5·54 and 3·47 tons of sucrose per acre for Ba. 6032 and B. 156 respectively. After the second year's results have been obtained, it is proposed to select the two or three best for trial on Sugar Estates. A complete report of all the Experiments for 1926 crop has been prepared.

The first results from Estates, of the 1917 and 1918 seedlings which were sent out for trial under estate conditions were obtained for the 1926 crop. In most cases the plots were badly damaged by Froghoppers, it may, however be pointed out that the good results recorded, at the Experiment Station, for the quality of the juice has been fully maintained from the plots reaped on the Estates.

The following are the results of plant canes from a few of the estates on which the plots were not badly attacked by Froghoppers. These figures were compiled by the estate authorities ;—

STE. MADELEINE SUGAR ESTATES.

Planted 13th November, 1924 — Field Golconda No. 10 (Black Soil)
Reaped 9th April, 1926 — 20 tons pen manure per acre.

Variety.	Area planted.	Tons cane per acre.	Sucrose per cent.	Purity.
T. 519	1/7 acre	28·3	19·52	90·20
T. 496	1/8 do.	29·0	18·68	89·25
T. 617	1/7 do.	32·9	18·08	87·50
T. 718	4/35 do.	36·1	18·95	89·22
B. 156	4/35 do.	32·2	14·75	74·83
B.H. 10(12)	4/35 do.	38·1	19·58	87·48
Ba. 11569	4/35 do.	42·8	16·53	85·10
Ba. 6032	1/7 do.	43·9	15·73	83·19

STE. MADELEINE SUGAR ESTATES.

Planted 29th November, 1924. — Field Picton No. 8 (new Alluvial Soil)
Reaped 9th April, 1926. — No Manure.

Variety.	Area planted.	Tons cane per acre.	Sucrose per cent.	Purity.
T. 496	5/33 acres	30·4	18·99	88·52
T. 718	6/33 do.	36·5	17·60	84·02
T. 519	do.	38·0	17·76	85·93
B. 156	do.	43·2	14·05	76·16
Ba. 11569	do.	43·9	17·62	81·88
Ba. 6032	do.	45·8	17·00	86·28
B.H. 10(12)	do.	46·0	19·62	88·54

TRINIDAD SUGAR ESTATES.

Planted November, 1924 — Orange Grove.
Reaped May 14, 1926.

Variety.	Area planted	Tons cane per acre.	Sucrose per cent.	Purity.
	A. R. P.			
T. 617	3 10	31·76	15·21	84·9
T. 519	1 0 0	34·22	18·07	88·7
T. 496	3 11	34·68	16·56	85·5
T. 718	3 0	38·76	17·72	86·4
B.H. 10(12)	Not stated	39·50	15·21	86·9

Good results were obtained at Woodford Lodge from T. 718 but the actual figures have not been given.

The first plots of the second lot of seedlings which were sent out to Estates in October, 1925, will be reaped during the 1928 crop. A further lot of five new Seedling varieties, viz.: T. 1022, T. 1113, T. 1429, T. 2009 and T. 2110 were sent in October, 1926, to ten Estates for trial.

MISCELLANEOUS.—Thirty samples of Soils were tested for acidity (pH. value), seven of these were from the Caroni Swamp and were also tested for salt (Sodium chloride) content.

The Manurial Experiment started last year on cacao and coconuts on behalf of the British Sulphate of Ammonia Federation, Ltd., have been continued and the results of the first crop after the application of the manures have been recorded.

In October, 1926, the Agricultural Chemist paid an Official visit to Grenada. During his stay of eighteen days he inspected the plantations of twenty-eight small and large proprietors giving advice on the methods of cultivation. Two meetings of the Grenada Agricultural Association were attended : at the first he gave a lecture on the carrying out of Manurial Experiments in cacao, pointing out the necessity of first getting the *natural* yield or past history of the yield of plots before applying manures and quoting results from the River Estate Experiments in support of his remarks. Five of the proprietors on whose estates plots had been marked out by Mr. L. Seheult, Cacao Agronomist, on a previous visit have agreed to follow this procedure and the suggested manuring of the plots will not be started until 1930. At the second meeting of the Association the Agricultural Chemist delivered a lecture on Coconut cultivation. He also wrote a report for the Government of Grenada on the causes of the decrease of the cacao crop of that Colony during the past five years

The Agricultural Chemist attended the Meetings of the Scientific Committee of the Froghopper Investigations.

As Inspector under the Cacao Claying Ordinance he visited most of the licensed Cacao Dealers premises, but no sign of claying of cacao was found.

GOVERNMENT FARM.—TRINIDAD.

General.

Capt. H. V. M. Metivier, Officer-in-Charge, Farm was on leave for six months. Mr. M. D. Lumsden, Overseer, acting for him.

Cattle.

DAIRY HERD.—31,543 gallons of milk were produced, an increase of 1,743 gallons, over 1925 ; of the sales 28,685 gallons were to Government Institutions.

The calves have been hand reared and the same good results obtained by the use of the whole-milk substitute calf-meal used during the last three years.

The Dairy cows were all bred to the imported pure bred Holstein bulls " King Butter Girl Walker " and " Mindi Homestead de Kol," the young pure bred bull " Royal Duke " (son of King) reared at the Farm were sent to Port-of-Spain for service in July, and, later in the year, transferred to Petit Morne Estate for use with the Dairy Herd of the Ste. Madeleine Sugar Co.

To these Holstein bulls 160 cows were bred at the Farm of which 120 were Farm Animals ; the fee charged for privately owned cows was $3.60.

Nine young Grade Holstein bulls —sons of " King " were sold for breeding purposes to estate owners in the Colony. All undesirable bull calves were sold for veal, but the number available were fewer than in past years.

At the annual sale nine grade cows and twenty grade heifers were sold, the cows averaged $50.00 and the heifers $34.00. The grade Holstein heifers fetched the best prices averaging $40.00.

The Agricultural Society met at the Farm on 11th March, when a paper on the " Feeding and Handling of the Dairy Herd " was read by the Officer-in-Charge. The cows were subsequently inspected in their stalls and demonstrations given in the hand rearing of calves at different ages. At the conclusion of the visit the Honourable A. B. Carr moved a vote of thanks to the Department for the practical lessons they had learnt. Sir Norman Lamont seconded and expressed his pleasure and satisfaction at the great improvement he had noticed in the management of the Farm.

ZEBU HERD.—The number of pure bred cows was nine throughout the year; to these were added all the highly graded zebu cows and the herd was kept in segregation as before. All the best milkers, when fresh, were stall fed. but turned out for exercise with the zebu herd. At the annual sale two pure bred bulls and two pure bred heifers were offered, but one bull was withdrawn as the reserve price was not obtained. Seven grade heifers and three grade bulls were also offered and sold. A young pure bred bull was sold to Cuba and two to Guadeloupe and a young grade bull to St. Vincent.

HEALTH.—The preventative methods, outlined in the report for 1925, to control contagious abortion which broke out in the dairy and zebu herds in that year have given satisfactory results. Twenty-two cows aborted and sixty-five calved normally, but the disease seemed to be under control at the end of the year.

Both herds were tested for tuberculosis in July by the intradormal and ophthalmic methods, and there were six reactors in the dairy herd. In no case was there tuberculosis of the udder, tuberculosis with emaciation, or tuberculosis with chronic cough. The milk of the reactors also gave negative results on bacteriological examination. The six reactors, four of which were imported Barbados cows, were slaughtered and showed tuberculous lesions on post mortem examination.

With regard to other diseases and injuries, one cow suffering from chronic arthritis was destroyed, one died from piroplasmosis (red water) and two from enteritis and debility. One calf died from pneumonia, two from parasitic gastritis and a young bull from red water.

Horses and Donkeys.

The government purchased during the year the thoroughbred stallion "Golden Eaglet," a bay horse, 4 years old, 17 hands, by "White Eagle" out of "Golden Eloquence." He was selected by the Officer-in-Charge during his absence on leave in England and cost, landed in the Colony £300. The money was provided as a supplementary vote following a resolution by the Agricultural Society asking the Government to import two new stallions.

"Golden Eaglet" is a winner and has raced in extremely good company; he won a 1½ mile race at Sandown Park in 1925, and his first outing in 1926 was the Queen's Prize at Kompton where he was placed 5th.

He will be used during next season, but the number of mares will be limited to 30.

"Quickmatch" served fourteen mares during the year at the Farm and at Palmiste Estate, San Fernando; three of these mares were Farm animals; his fee for privately owned mares was $15.00. There was a demand for his services in Tobago and he was sent over in May. The two fillies bred at the Farm by "Quickmatch" out of "Cavel" and a "James Reddich" mare and sold at the 1925 sale raced with success at the Xmas meeting in Port-of-Spain; one of them won the "Anchor Cup" and this entitles the Farm to a prize of £30 as the Breeder of the Winner. This amount will be credited to Stud Fees ("Quickmatch") next year.

"Marat" has fallen away considerably in condition due to old age and will be destroyed. During the year he only served one mare and his fee was fixed at $10.00. Four filly foals by "Marat" out of Farm mares were born early in the year and have grown well for their ages; they will be offered at the next annual sale. Their dams were all bred to the Jack Donkey this year.

The Kentucky Jack "Emperor" stood for service at the Farm and was bred to 23 mares; of these seven were Farm animals (Service fee $7.50). A mule foal 9 months old by "Emperor" was sold at the annual sale for $70.00.

"Barbados Joe" served during the year 22 jennies and 16 mares; the fees for service was $1.00 for donkeys and $5.00 for mares, he stood for service at the Farm, Arima, Sangre Grande and Toco.

Pigs.

The pig runs constructed in 1925 by the Public Works Department have enabled the piggery to do much better this year; it has been possible to give all the animals more exercise and their condition has improved considerably.

Three breeds were kept, Berkshire, Large Black and "Blue Hogs" from six sows (two of each breed) there were 57 young pigs 27 boars and 30 sows.

The "Blue Hog" is doing well; the sows are very prolific and good mothers. Two young Berkshire Sows reared at the Farm from the imported Canadian Sows have been added to the piggery. At the annual sale 15 lots of pure bred pigs were offered and realised $133.50 or about $9.00 a head.

The imported Large Black Boar, after four years service, died in July from paralysis, following a heavy infestation of *Stephanurus dentatus* (kidney worm). His place has been taken by a Large Black from Tobago, larger than the imported Boar.

Six young pigs died during the year from parasitic pneumonia (Thumps). The number of outside service this year was only 19 (16 large Black and 3 Berkshire) compared with 38 for 1925. The fee for service was $1.50.

Dairy Goats.

For the first time in the history of the Farm it was possible, at the annual sale, to offer dairy goats, 7 young does and 3 young bucks, but two bucks were withdrawn as there was not a demand for them, the eight lots sold fetched $179.00 an average of $22.50 each.

The young buck by "Roby" out of "Madel" has taken the place of his father as leading buck. The number of outside services were 23 at $2.00 each. At the end of the year several kids were born but the majority of them were weak and died from digestive troubles. The goats are now not confined to their enclosures throughout the day and night as before, but are allowed to walk around the grassfields for a few hours every day and they are thriving better.

Bucks were stationed at Couva, Arima, Cedros, Debe, Cedar Hill and St. Ann's during the year, and two sent to Tobago for use in out districts.

Poultry.

The following fowls were purchased locally Plymouth Rocks (3 cocks and 5 hens) Rhode Island Reds (2 cocks and 10 hens). These cost $125.00, 1,736 eggs were sold for $173.00. The sale of birds was greater than last year, the revenue being $190.00 as compared with $134.00 in 1925. Good results were obtained in rearing chickens.

The Muscovy ducks have given satisfactory results; the ducklings are easily reared and in good demand. At the annual sale seven lots were disposed of and several ducks and drakes were sold privately during the year.

Sale of Stock.

The Annual Sale was held on 12th February and conducted by the Farm Staff. His Excellency the Governor was present and the attendance was very good. Forty-eight head of pure-bred and grade cattle, 1 mule colt, 10 pure-bred and grade Saanen goats, 15 pure-bred pigs, 25 lots pure-bred poultry and 7 lots Muscovy ducks were offered. The bidding for the heifers offered was very keen and the prices good. The total receipts were $2,268.00 a decrease of $225.00 on the 1925 sale.

PRIVATE SALES.—Animals were sold and shipped to Barbados, St. Vincent Cuba and Guadeloupe; these sales realised £205, though the Guadeloupe money, £150, was received after the end of the year and has been credited to the 1927 sale of stock. The total received for the sale of stock for the year, not including this £150 was £600.

Public Pastures.

The public pasture at the western boundary was again well patronised, the daily average was 100 head. A grade Holstein bull was kept in the pasture for part of the year and a pure-bred Zebu bull the rest of the time. A new fence, with reinforced concrete posts, was erected at the southern boundary.

Cows and heifers sent to be bred to the pure-bred Holstein bulls were again pastured in another savannah and the daily average in this case was thirty-five.

The Spraying Machine was used regularly during the year and the cattle in these two public pastures were sprayed at the same intervals as the Farm Stock.

The revenue derived from Pasture Fees and Stabling was £330 this year, £100 less than that of last year, but a larger amount was outstanding at the end of this year.

Fodder Plants.

The dry season was very severe as shown by the rainfall for the first four months of the year. January ·97 ; February ·35 ; March ·13 ; April ·30.

It was still possible to carry out our fodder contract with the Constabulary because they accepted Uba cane or cane tops as fodder during the dry weather. Later on in the year grass was also supplied to the City Council as well as the Constabulary. The revenue so obtained was £650.

Uba Cane.—The fifteen acres planted with this cane were cut only once during the year : Uba cane, " chop chop " (of the whole plant) was used in January, February and again after crop (during the sugar crop cane-tops were used). This Uba cane fodder lasted until June, when the rainy season had started and grass was again available.

A small patch in the five-acre block planted in 1923 and another small area in the seven acres planted in 1924, suffered slightly from an attack of Froghopper blight.

Two and a half acres were planted in Uba this year on irregular pieces of ground adjoining the Uba Cultivation : the cost of planting was again $15.00 per acre. With the area now under Uba there should be no difficulty about fodder in the future, and as the wet weather continued up to the end of the year and grass was abundant, it will be possible to cut about eight acres of Uba cane for factory use during 1927.

Sugar-Cane.—1,395 tons of cane were cut and sold to Orange Grove Factory but the price per ton was $3.96 (including freight and loading paid by the Farm) as compared with $4.71 last year, with no freight and loading to be paid ; consequently although our yield was 348 more tons, the revenue £1,083 5s. 11d. as in 1925 was about the same. The increase in yield was due to the cutting of the five-acre block of plant canes B. 11569 which gave 175 tons or 35 tons to the acre. The first ratoons from 30 acres of B.H. 10 (12), Ba. 6032 and B.156 yielded 40 tons per acre, and provided the Farm with another 300 tons of fodder.

The-five acre plot in B. 11569 was hand forked but the ratoon fields were all ploughed with the pony plough and pen manure applied. A cut was made on each side of the stools and in the furrow a basket of manure was applied to every two stools on each side. Sixteen acres were treated in this way but the other fourteen acres received half the quantity of manure, *i.e.*: half a basket per stool.

All the cane fields received three weedings during the year. These ratoons have grown well and only a very small area was affected by Froghopper blight : It is estimated that their yield 1927 crop, will be over 40 tons per acre. Nine acres adjoining the thirty planted in 1924 were banked and planted in sweet potatoes, and B.H. 10 (12) ; these canes which will be manured early in January have grown vigorously and should give a good return when cut in 1928.

' Java Unknown ' Cane.—The nursery started at the end of last year has been extended along the river banks, and two acres at the western end of the Farm have been planted with this fodder cane. It does not produce as much trash as Uba, but it is still too early to report on its value as a fodder plant in comparison with Uba.

SWEET POTATO VINES.—Eleven acres were banked and planted in potatoes and as already stated nine of these were planted in cane (B.H. 10 (12)). The other two acres was used up in extending the Elephant Grass cultivation. The fodder from the eleven acres will be cut early next year before the potatoes are reaped. Vines were reaped from the five acres planted in 1925, but the yield was not more than 2½ tons of fodder per acre owing to the severe drought.

ELEPHANT GRASS.—This grass (*Pennisetum purpureum*) is giving most satisfactory results : Four acres yielding a poor grass return was ploughed up, manured and planted with this grass and Bengal Beans.

It will be cut early in the new year, the vine and grass making an excellent mixture for the dairy cows.

The policy of introducing this grass into the grass fields gradually was continued.

GUATEMALA GRASS (*Tripsacum laxum*).—No attempt was made to extend the cultivation of this grass. It is intended, however, to plant it in more suitable soil next year as along the banks of the river it does not seem to give satisfactory results.

PARA AND GUINEA GRASSES.—These grass fields were manured again during the year and in spite of the dry weather their returns were good. A start has been made to plough small areas every year, manuring them and introducing Elephant Grass.

BENGAL BEANS.—The beans were not grown for seed this year, but together with Elephant grass and used as fodder of which the dairy cows are very fond.

MISCELLANEOUS.

COCONUT PLANTATION.—A dozen trees were lost through drought and the whole area under coconuts were supplied during the end of the year. The nuts were sold locally realizing £25. A portion of the young plantation south of the Recreation Ground was manured.

DRYING AND MILLING PLANT.—The old boiler was condemned by the Inspector and a second hand one was purchased from Alston & Co., Ltd. and installed towards the end of the year. Owing to this, the Factory was at a standstill for five months.

35,443 lb. of corn on cob were shelled, dried and stored, 68,019 lb. of corn, 28,672 lb. of Pigeon peas and 8,222 lb, of Black Eye peas were dried and stored. All this work was done for the Ground Provision Depot.

BUILDINGS, &c.—The Public Works Department repaired and painted the Dairy Foreman's Quarters, a four roomed barrack, and the Corn Factory. A new Calf Pen was erected. The gutterings were removed from all Farm buildings and concrete surface drains laid down to carry away the flood water.

The Expenditure by the Public Works Department was as follows :—

	£	s.	d.
Calf Pen	177	18	9
Painting Factory ..	75	0	0
Maintenance of Farm Buildings and Barracks	68	15	0
Water Rates	115	8	4
	£437	2	1

INSTRUCTION.—During the year the Farm was visited by the First and Second year Diploma students of the Imperial College of Tropical Agriculture ; the former in connection with their course in stable management and the latter for demonstrations in castration of various Farm animals.

Visits were also paid by the Parent Agricultural Society, the Siparia and the Savana Grande District Agricultural Societies, the Tobago Light Horse and the Tobago Boy Scouts.

Revenue and Expenditure.

Revenue.	£	s.	d.	*Expenditure.*	£	s.	d.
Milk and Poultry	3,787	11	9	A. Personal Emoluments ..	398	3	0
Miscellaneous	648	4	5	B. Wages	2,499	19	5
Pasture Fees	328	8	2	Travelling Manager	4	13	10
Sale of Canes	1,083	5	11	Do. Motor Lorry ..	249	18	4
Sale of Surplus Stock	601	0	0½	E. Miscellaneous	11	3	8½
Stud Fees	203	13	6½	F. Materials	345	19	7½
				G. Stock Purchase	843	0	8
				Do. Feed, Purchase of ..	1,519	1	8
				Do. Expenses Stallions ..	147	0	8½
	£6,652	3	10		£6,019	0	11½

GOVERNMENT FARM.—TOBAGO.

There was some falling off in the demand for the services of the horse and donkey sires. The Thoroughbreds "Nelsweep" and "Quickmatch" served 16 and 10 mares respectively, the Kentucky Jack "President" 20 mares and the half bred Jack "Foch" 9. "Nelsweep" was in Tobago from June 1st the others for the whole of the year. Fees for bull services although small were about double those of 1925, and for boars the increase was about 50 per cent. The Saanen bucks were in much greater demand, 44 does were bred to them compared with 31 in 1925 and 6 in 1924. Two bucks sent from Trinidad were stationed at Roxborough and Plymouth, but were not used.

Fresh pure bred poultry were received from Trinidad and sales both of birds and eggs increased appreciably.

The principal items of Revenue and Expenditure are given below :

Revenue.	£	s.	d.	*Expenditure.*	£	s.	d.
Service Fees	94	0	0½	Salaries	175	0	0
Pasturage and Stabling	36	2	0	Travelling	11	5	0
Sale of Stock	13	16	4	Labour	287	13	6
Do. Poultry and Eggs ..	17	12	3	Materials	24	19	5
Do. Coconuts	101	5	1	Stock Feed	99	18	3
Do. Wood and Grass ..	33	2	6	Clearing Pasture and Fencing ..	21	2	10
Do. Medicines, &c.	1	5	9½	Telephone	5	0	0
	£297	4	0		£624	19	0

VETERINARY DIVISION.

GENERAL.—During the absence on leave of Capt. H. V. M. Metivier from 19th July until the end of the year Mr. M. D. Lumsden, B.V.SC. performed the duties of Government Veterinary Surgeon.

Due to the amalgamation of the Grenada and the Trinidad and Tobago Departments of Agriculture, the official Veterinary work of Grenada was taken over. The only important matter requiring attention was the control of an outbreak of Swine Fever in the parish of St. Andrews at the end of the year. This was carried out with the help of a private practitioner, Mr. Cyril Steele B.V.SC. and the Medical and Sanitary Department of that Colony.

In Tobago the horses and mules of the Constabulary and Public Works Department were inspected as well as the stock on the Government Farm. Three horses were purchased for the Constabulary, one for duty in Tobago, and two for Trinidad.

Demonstrations were again given in the Island-ward on the bloodless method of castration in ruminants: Cattle and sheep were castrated at Goldsborough, Lowlands, Bacolet and the Government Stock Farm. A few peasants horses and mules were also castrated by means of the Emasculator.

Most of the large estates in Tobago were visted and owners advised about the provision of fodder in the dry season by planting Uba cane.

The dry weather was again very serious this year, but provision was made by most of the large plantations to provide fodder for their stock during this time. This was especially the case with the large sugar plantations where areas planted in Uba cane were reserved for stock feed before and after crop. A considerable quantity of Elephant grass (*Pennisetum purpureum*) has also been planted on sugar and cacao plantations. The results of the use of these two forms of fodder, Uba cane for the dry season and Elephant grass for the rainy season on the Government Stock Farm at St. Joseph has been so successful for the last three years, that it is hoped that even more areas will be planted up throughout the Colony in 1927 with these fodder crops.

PROCLAIMED DISEASES.

ANTHRAX.—No more cases occurred at Rivulet Estate, Couva, where cattle died of this disease in 1924 and 1925. The General Manager has been advised to vaccinate the animals once yearly (spore vaccine). There were only two cases at the Detention Station in Port-of-Spain amongst Venezuelan oxen quarrantined against the disease. An outbreak amongst a sugar plantation's mules was reported from British Guiana and all available Anthrax Vaccine (Anthraxoid) was despatched by first opportunity.

SWINE FEVER.—There was an outbreak of Swine Fever in the Parish of St. Andrews, Grenada, and that area was declared an infective one under the Diseases of Animals Ordinance. The outbreak had not stopped at the end of the year. All affected pigs were slaughtered and incontacts segregated, but the disease spread rapidly owing to the manner in which the peasants allowed their pigs to roam about.

GLANDERS AND EPIZOOTIC LYMPHANGITIS.—No case occurred.

RABIES.—The number of imported dogs quarantined during the year was six, eighteen performing dogs were allowed to be kept in private quarantine at a Theatre. The quarantine restrictions have been altered to allow dogs imported from Great Britain, and Northern Ireland to be admitted without any period of detention, provided they carry a certificate from the Ministry of Agriculture and Fisheries of Great Britain, stating that they were born in those countries and were not in quarantine at the time of shipment, also that no outbreaks of Rabies were under control in those countries for a certain period before shipment. It is also essential that the Master of the Vessel shall sign a statement to the effect that the dogs were not landed at any port during the voyage and were not in contact with dogs shipped from other countries.

TUBERCULOSIS.—The ten reactors to the Tuberculin test in the Couva District last year were all slaughtered early in the year.

The Dairy Cattle at the Government Farm were all subjected to the Tuberculin test this year, and there were seven reactors out of 130 animals tested. This was done owing to (1) the detection of the disease in the Couva District (2) the fact that a cow died at the Farm and showed the disease macroscopically, microscopically and culturally on post morten examination. The majority of the cases at the Farm were found in the cows imported from Barbados. All the reactors at the Farm were also slaughtered and buried.

In the reactors both in the Couva District and at the Farm there were no cases of (1) Tuberculosis of the Udder, (2) Tuberculosis with Emaciation or (3) Tuberculosis with Chronic Cough.

Foot and Mouth Disease.—The regulations governing the importation of animals from countries where this disease exists still remain in force and with the exception of horses no animals were imported from such countries.

NON-PROCLAIMED DISEASES.

Contagious Abortions.—A few cases occurred in dairies during the year, but the outbreak at the Farm seemed to be well under control at the end of the year.

No Vaccine treatment was carried out. The measures taken were:

(*a*) Establishing a maternity ward where cows calving normally are kept for 21 days after calving.

(*b*) Providing another ward where all aborting cows are isolated for 60 days.

(*c*) Washing out the Sheath of the Bulls with a solution of potassium permanganate immediately after service.

In the case of (*b*) pessaries containing equal parts of boric acid and iodoform are inserted once a week.

After effects of the disease however, such as frequent services before proving to be in calf, and in two or three cases, sterility, have been observed on the Farm.

Bovine Piroplasmosis or Red Water.—A serious outbreak occurred in the Maraval District in January due to the pasturing of susceptible cows (Barbados imported) on an infected Savannah. The death rate was high amongst adults, but as would be expected the young stock were resistant and recovered. Since this outbreak a fresh supply of Trypan Blue is obtained quarterly from the Crown Agents, in order to deal with such cases, but stock owners have been advised not to pasture susceptible imported animals, and in future to import only young cattle in order that they may be naturally immunized due to their greater resistance.

Bulbar Paralysis in Pastured Animals.—There were no outbreaks of Grass Disease during the year. Stock were pastured in all pastures in the Port-of-Spain District, where the disease occurred last year, with the exception of the Queen's Park Savannah.

Strangles.—This disease was chiefly seen in imported Kentucky mules. Most develop the disease during the voyage from the United States of America but as a rule they recover rapidly after landing.

Ulcerative Lymphangitis.—This disease was not prevalent during the year. There are a few cases in the Southern part of the Colony, but the Northern is quite free. During his leave the Government Veterinary Surgeon worked on this disease at the Institute of Animal Pathology, Cambridge.

Granular Dormic Sores in Donkeys.—This disease appeared to be on the increase in the Naparima due to (1) neglect in disposing of manure (2) delay in dressing wounds about the limbs of donkeys. A paper on the condition was read at San Fernando by the Veterinary Surgeon of the Ste. Madeleine Co. laying stress on the preventative measures outlined by this division in 1921.

Tetanus.—Very few cases were reported during the year and there were none amongst Government animals.

PARASITIC GASTRITIS in Cattle and Dairy Goats and Pigs. The results of preventive treatment at the Government Farm by monthly doses of copper sulphate for all young stock has been so successful that the method has been widely advocated. The drug seems to act splendidly and owing to its low cost the treatment should be carried out on all plantations. The drug not only kills organisms that are pathogenic in the alimentary tract but also others that would eventually reach the respiratory system causing bronchitis and pneumonia.

VETERINARY LECTURES.

During the year the Government Veterinary Surgeon gave a course of lectures to the 2nd year Diploma Students, and special students at the Imperial College of Tropical Agriculture. The following papers were also read to Agricultural Societies :

(1) Pig Rearing—Windward District Agricultural Society (Tobago). This paper was published in the *West India Committee Circular* during the year.

(2) The feeding, care and management of Dairy Cattle—The parent Agricultural Society at the Government Farm, St. Joseph. This was followed by demonstrations on the Farm.

T. S. P. C. A.

This Society has done excellent work and the number of cases of cruelty have considerably decreased. The Government Veterinary Surgeon gave evidence on behalf of this Society in 18 Police Court cases during the year.

The Constabulary conducted their usual campaign of collecting stray dogs and these animals were all destroyed by this Division.

GOVERNMENT ANIMALS.

The Horse Transport Train of the Public Works Department in the County of St. Andrew's was disbanded and motor transport substituted. The stock were valued by the Government Veterinary Surgeon and sold at his valuation to the Cocal Plantation. Owing to the removal of the Leper Settlement from Cocorite to the Island of Chacachacare the cattle at the Cocorite Asylum were slaughtered over a period and the meat rationed to the inmates.

At Chacachacare a herd of milch goats (Saanen) has been established and the animals are doing extremely well. The Piggery started at the New Settlement is also in a most flourishing condition and a pork ration is often fed to the inmates. The pigs bred are a cross between the Berkshire and Large Black using Berkshire Boars—and the animals are fed on swill chiefly.

The Government Veterinary Surgeon visited Government animals at the following country districts during the year ; San Fernando, Cocorite, Arima, Diego Martin, Sangre Grande, Chaguanas, Chacachacare, Couva, also Plymouth and Roxborough in Tobago.

IMPORTATION OF ANIMALS.

The following animals were imported into the Colony and inspected : Horses 59, Mules 216, Donkeys 13, Dogs 41, Cattle 7,723, Sheep 603, Pigs 2,605, Goats 1, 789. These animals all arrived at Port-of-Spain, there were no inspections carried out by the Assistant Examiners at Scarborough or San Fernando.

In the above mentioned animals were included 15 thoroughbred horses from England, 2 American Saddle horses, 131 Kentucky mules, 6 Dairy cows from Barbados, 11 Saanen goats from the same island, 3 couples of Foxhounds and 1 couple of Beagle Hounds. The revenue obtained for the services of this Division for this work amounted to £1,267 3s. 4d.

PASTURES IN PORT-OF-SPAIN DISTRICT.

During the five months absence on leave of Capt. H. V. M. Metivier, Mr. F. C. Buthn, Curator, acted as Superintendent of Pastures. His Excellency the Governor decided to keep the Queen's Park Pasture closed to stock for the whole of 1926. The extra cost of upkeep necessitated increased expenditure of £133 on the labour vote which was met by savings on other votes. The cost would have been more, had not arrangements been made to allow owners of stock to cut and cart grass free of charge. The Queen's Park is now used much more for recreation and grounds were allotted to several new clubs during the year.

In the St. Ann's small Savannah the cattle pastured averaged 40 per month the range being from 50 in July to 26 in May.

The Mucurapo Savannah again suffered considerably from mole crickets and the "greens" of the St. Andrew's Gulf Club were badly damaged. Stock was pastured on this Savannah during the year, and the average number per month was 70; January 97 falling to 42 in May and rising again to 89 in December.

Five Farm Bulls—1 pure-bred Red Poll and 4 grade Holsteins were stationed at the Mucurapo stables. Two were used on the Mucurapo Pasture, one on the St. Ann's Pastures and two kept for service at the stable. The number of services at the stable was 352. For a short period a pure-bred Holstein bull was sent to the stables, but as there was not much demand for him he was transferred to the Usine Ste. Madeleine.

The Expenditure was £132 more than 1925 and the Revenue £233 less than 1925 and £435 less than 1924 due to the removal of cows from the Queen's Park.

Revenue.

	£	s.	d.
Mucurapo Pasture	189	2	2
Queen's Park Pasture	92	2	6
	£281	4	8

Expenditure.

	£	s.	d.
Personal Emoluments ..	125	0	0
Labour	812	12	3
Materials	62	3	4½
Care of Trees	39	2	11
Feed for Stock	144	13	10
Hire of Bulls	50	0	0
	£1,233	12	4½

RIVER ESTATE.

CACAO.—This year's crop was short—only 829 bags (of 165 lb.) were reaped. The crops for the last five years were:—

1921.	1922.	1923.	1924.	1925.	Average.
1,272	847	1,250	918	1,169	1,091

The 829 bags were made up as follows: 127,618 lb. grade or Estate Cacao and 9,232 lb. black cacao and pacilla (broken beans, &c.). The alternating of the crop of good and bad years is very marked, and to what extent this is due to seasonal fluctuations or to a natural tendency of the cacao tree to rest after a period of prolonged effort, remains to be investigated, intensive cultivation would no doubt influence the latter condition. In spite of the poor crop and prices obtained, the usual progressive working programme was not hampered—continued reduction of shade, heavy manuring, thorough supplying, preparation and care of nurseries, good sanitation and general cleanliness of the fields were well maintained, and should result in a record crop for 1927.

The price paid for 1st grade cacao by the Cacao Planters' Association worked out at roughly $12.65 per fanega (110 lb.).

The most noteworthy feature during 1926 was the intense drought experienced during the first five months of the year, when only 3·58 inches of rain was recorded. As a result of this there was a severe outbreak of Cacao beetles which caused considerable damage to young cultivation.

In last year's report mention was made of the serious loss of fruit from "Black Rot" and while this has been just as bad during 1926, present indications are that a method of control can be attained by the prompt and systematic burial of cacao shells as soon as the beans have been extracted, while a reduction of shade and a higher standard of cultivation play an important part in this respect.

Statements are attached showing yields of fields during the last four years both as regards yield per acre and 1,000 bearing trees, and revenue and expenditure.

Field Return. CACAO.

No. of Field.	No. of Bearing trees.	Half trees.	Quarter trees.	Supplies	Missing.	Total.	Age of trees.	Distance planted.	Acreage	Yield. 1923. No. of Bags.	1923. Bags per Acre.	1924. No. of Bags.	1924. Bags per Acre.	1925. No. of Bags.	1925. Bags per Acre.	1926. No. of Bags.	1926. Bags per Acre.	Notes.
1	4,862	283	645	649	74	6,513	20-25	12 x 12	21.7	53.33	2.4	37.33	1.7	44.00	2.0	27.33	1.2	Partly no shade.
2	2,020	126	549	1,345	83	4,123	50-55	15 x 15	21.7	44.72	2.0	30.66	1.4	48.00	2.2	31.33	1.4	Partly manured.
A 3	1,499	182	272	677	30	2,660	50-55	15 x 15	14.0	40.00	2.8	25.33	1.8	38.66	2.7	28.00	2.0	Partly manured.
B 3	1,383	221	339	280	7	2,230	50-55	15 x 15	11.7	30.66	2.6	21.33	1.8	30.66	2.6	19.33	1.6	Partly manured.
4	5,141	257	430	62	1,128	7,018	40-50	12 x 12	23.3	47.33	2.0	48.33	2.0	56.00	2.4	32.66	1.4	
5	2,082	170	343	334	13	2,942	50-55	15 x 15	15.4	68.68	4.4	50.33	3.2	60.66	3.9	43.33	2.8	Part in Partial and No Shade [Experiments.
6	5,452	337	436	769	46	7,040	20-25	12 x 12	23.4	102.66	4.3	61.33	2.6	92.66	3.9	52.00	2.2	
7	3,447	477	545	422	56	4,947	20-25	12 x 12	16.4	61.33	3.7	44.00	2.6	60.66	3.7	35.33	2.1	Manured.
8	5,275	910	1,094	132	684	8,145	20-25	12 x 12	27.1	84.00	3.1	51.39	1.8	69.33	2.5	54.66	2.0	Partly manured.
9	4,327	856	1,044	1,231	60	7,528	20-25	12 x 12	25.0	66.66	2.6	53.33	2.1	48.66	1.9	46.00	1.8	Partly manured.
10	3,016	414	905	536	119	4,990	20-25	12 x 12	16.6	32.66	1.9	22.66	1.3	21.33	1.2	22.00	1.3	
11	2,070	161	510	398	63	3,202	20-25	12 x 12	10.6	20.66	1.9	14.66	1.3	16.00	1.5	13.33	1.2	
12	3,130	621	1,399	89	1,113	6,352	20-30	12 x 12	21.1	31.33	1.4	21.33	1.0	23.33	1.1	16.66	.7	
13	3,438	279	740	72	758	5,287	20-30	12 x 12	17.6	59.33	3.3	44.00	2.5	64.00	3.6	46.66	2.6	
14	989	293	425	..	400	2,107	50-55	12 x 12	7.0	11.33	1.6	6.66	.9	6.66	.9	6.66	.9	Unworked section of estate.
15	1,810	225	334	..	292	2,661	50-55	12 x 12	8.8	9.33	1.0	6.00	.6	6.66	.7	5.33	.6	
16	3,457	346	987	32	954	5,776	20-50	12 x 12	19.2	24.33	1.2	16.00	.8	24.66	1.2	20.00	1.0	
17	4,557	597	1,269	153	657	7,233	20-25	12 x 12	24.1	59.33	2.4	38.00	1.5	44.00	1.8	21.33	.8	
18	3,038	628	938	84	565	5,253	15-25	12 x 12	17.5	42.33	2.4	37.33	2.1	32.66	1.8	33.33	1.9	
19	4,056	369	380	220	68	5,093	15-25	12 x 12	16.9	50.66	2.9	49.33	2.9	48.66	2.8	35.33	2.0	Partly manured.
20	5,167	332	331	395	26	6,251	15-25	12 x 12	20.8	84.66	4.0	58.00	2.7	72.00	3.4	50.00	2.4	Partly manured. No shade.
21	3,561	264	295	584	239	4,943	15-25	12 x 12	16.4	54.18	3.3	45.33	2.7	60.66	3.7	38.66	2.3	Partly manured.
22	5,184	1,231	1,276	48	758	8,497	15-25	12 x 12	28.3	72.66	2.5	54.66	1.9	92.00	3.2	61.33	2.1	Partly manured. Very lightly shaded.
23	3,227	554	767	30	322	4,900	15-25	12 x 12	16.3	49.33	3.0	38.28	2.3	59.33	3.5	46.66	2.8	Trenched and mulched with
24	1,696	612	1,457	287	636	4,688	15-25	12 x 12	15.6	19.33	1.2	20.66	1.3	24.00	1.5	15.33	.9	Not manured. Immortelle loppings, &c.
25	2,027	506	366	190	236	3,325	8-20	12 x 12	11.0	29.33	2.6	22.00	2.0	24.00	2.1	26.66	2.4	Partly manured.
Totals	85,911	11,261	18,076	9,069	9,387	133,704	..	..	466.5	1,250.15	..	918.26	..	1,169.24	..	829.24	..	
Total Average Yield per acre (bags of 165 lb.)							..	..	..	..	2.6	..	1.9	..	2.5	..	1.8	
Total Average Yield per 1,000 bearing trees (bags of 165 lb.)							..	..	..	..	14.55	..	10.68	..	13.60	..	9.65	Average for 4 years—12.2 bags per acre.

OTHER CROPS.—These comprise five different crops occupying an area of roughly 83 acres as follows :—

Citrus 25 acres, Mangoes 8 acres, Coffee 20 acres, Limes 20 acres, Tonca Beans 10 acres. With the exception of Coffee and lime which have just come into bearing, all these crops are very young and non-productive ; their proper maintenance and development are responsible for a large portion of the total expenditure and due regard must be paid to this, as well as to the cost of Cacao Experiments and Timber cultivation in considering the annual expenditure.

During the year 10,810 lb. limes were sold to the Carenage Factory and the Coffee crop amounted to 1,049 lb. clean coffee (Robusta) which was sold at 17 cents per lb.

TIMBER.—The large area under timber cultivation about 400-500 acres is progressing slowly. The expenditure under this head including purchase of, and advance to contractors was £233 15s. 5½d.

BUILDING AND STOCK.—The two old cacao houses with Overseer's quarters and store rooms below are getting into a bad state, and will have to be attended to. The roofs of all buildings require painting and the curing house requires repairs and alterations. The three large cacao houses, labourers barracks and Manager's quarters are in good order.

The stock comprising one horse, five mules and one bull loaned from the Government Farm ; all kept well.

The motor lorry proved very useful and was kept in continual service making three loads per day of manure from the City.

RAINFALL.—The total rainfall registered during the year was 60·75 inches.

REVENUE AND EXPENDITURE.—The total revenue for the year was £3,272 8s. 10d. and the total expenditure £3,919 10s. 6½d. showing a deficit of £647 1s. 8½d. The previous year showed a surplus of £691 19s. 6d.

Statement of Revenue and Expenditure for the year ended 31st December, 1926.

Revenue.

	£	s.	d.
Sale of Cacao	3,154	6	8
Land Rent	3	5	5
Miscellaneous	95	5	0½
Pasture Fees	19	11	8½
	£3,272	8	10

Expenditure.

	£	s.	d.
Staff :			
Manager, Clerk, Travelling and House Allowance			
Superintendent	522	5	10
Overseers, Drivers, Watchmen	506	11	5
Transport (Carts, lorry, &c.)			
Labour	373	6	9
Materials	113	9	0
Experimental Work :			
Extra Supervision, Extra cost cultivation, Manuring, &c.	73	17	1½
Extra cost Picking and Recording	21	15	10
Cacao :			
(*a*) Cultivation	1,059	2	11
(*b*) Manufacture	422	11	8½
(*c*) Non-Recurrent	21	14	6
Fruit :			
Oranges and Mangoes	76	13	10½
Coffee	43	15	4½
Limes	30	4	10½
Tonca Beans	30	10	8½
Timber	233	15	5½
General	359	15	2
	£3,919	10	6½

CACAO.—EXPERIMENTS AND ADVISORY WORK.

The Cacao Agronomist and Superintendent of River Estate has as usual supervised the experimental work at River Estate and paid advisory visits to estates.

A few points from his general summary may be mentioned.

The Cacao crop was an unusually bad one throughout the island, particularly so in the Diego Martin district where, outside of River Estate, it failed completely.

Our intensive work here was of too recent undertaking and on too small a scale in 1925, when it began, to effect any extensive or marked counteracting influence on the abnormal seasons of the end of that year and at the beginning of 1926. That it can do so has been well established since then.

The chief causes of this shortage in crop on River Estate in 1926 were the damp hot weather, heavy rain and hot sun alternating daily for months, which killed the bulk of the fruit that had set in September, October and November, 1925, and secondly the long drought lasting five months, which immediately followed, and prevented continuity in flowering and fruit-setting in the early months of 1926.

Intensive cultivation can and does control greatly the ordinary abnormalities of weather or season and because of that a big development is now being given to it on River Estate.

With the building of other barrack rooms, which we have asked for; a more regular and well established supply of expert labour would be secured.

The carrying out of protective measures against black pod rot if persisted in must, jointly with intensive work, lead to good results, which we anticipate for 1927, and subsequent years regardless of season.

A passing remark may be made in regard to the effect of the long drought on shaded and non-shaded cacao, which should be a means of encouraging planters who own densely shaded cacao fields to take up the reduction of shade earnestly. Every non-shaded cacao field on River Estate withstood the drought well, and suffered no loss through it, whereas some of the more densely shaded fields suffered considerably. This was my experience also of other parts of Trinidad during the drought, when commonly it could be seen that the more densely shaded fields on flat or vega land were more under the evil influence of the drought than were the fields on the slopes and summits of undulations having generally poorer and more shallow soil and less shade.

Subsidiary crops have assumed a big and satisfactory development on River Estate, and are expanding in extent, and in kind.

At present these plantations represent quite a lot of accumulated capital, and together, in a few years, will be a bigger asset to the public than the whole of the cacao plantation of River Estate.

The timber plantation, alone, should be worth within 10-15 years from now several times more than the whole of the section planted in cacao. In preparedness for the development of the export fruit trade (grape fruit, mango, oranges) a large area has been planted and is well maintained and large dependable nurseries of these fruit trees have been set up. The extent of each of these is expanding every year, and of course they are unprofitable, while still young and giving very little revenue; but already a few are paying their way and their value is much more than what has been expended on them. If the whole expenditure on these new undertakings and on experimentation work were taken into full account it would be represented by approximately £1,500. Although actual expenditure on them is kept separately there is some difficulty in apportioning correctly their share in the general expenditure on staff, roads, bridges, stock, materials, &c.

The Cacao experiment plots were well maintained, the newer ones are developing well, and have all come into bearing and already show characteristic and interesting features.

PLANT PATHOLOGY.

Sugar Cane—Froghopper Blight.—Weather conditions, which had been favourable to froghoppers last year, continued in 1926 and resulted in 7,211 acres being severely blighted and 3,153 acres slightly blighted. The first brood appeared in July, the second in October and the third in December. Canes were blighted by the first and second broods and by the end of the year there was recovery in the canes that had not been killed outright.

Mosaic Disease of Sugar Cane.—Mosaic disease is still a source of much concern. The worst affected area is in the northern part of the Island from San Juan to Arouca. In this district there are about 2,000 cane farmers averaging one acre each. During the year in spite of a more vigorous campaign there has been an increase of infestation eastwards. The Southern part of the sugar growing belt is now almost free.

Sugar Cane Borers.—The large moth borer *Castnia licus* was more numerous than usual in the Southern district.

Cacao.—In the northern range the long dry season was beneficial to cacao cultivation but in the central and southern districts the trees suffered severely from lack of moisture coupled with high winds. The heavy rains of the last few weeks of the year brought about a slight increase of pod rot. (*Phytophthora*)

Thrips.—There were no serious outbreaks of Cacao thrips reported.

Cacao Beetle.—The increase reported last year was greatly favoured by the long drought and towards the end of the year there was hardly an estate that had not suffered some damage. The eastern and southern districts suffered most. In December a special Cacao Beetle campaign was organised and steps were taken to obtain the necessary funds to enable the campaign to be started in 1927.

Coconuts.—The severe drought markedly affected this staple. In all areas the percentage of selects were appreciably reduced.

Of late there has been a marked reduction of red ring. This is largely accounted for by the fact that the trees are ageing and getting beyond the susceptible stage.

From what one can deduce from a fairly lengthy study of the crop, one is led to the conclusion that specific bud rot is comparatively rare.

There is still a considerable amount of " Little-leaf " most of it in inland properties however.

There were no serious outbreaks of the caterpillars of the Coconut butterfly (*Brassolis*) this year.

The drought coupled with high winds brought about an increase of scale insects. The attacks were controlled by natural enemies.

Coffee.—This is becoming a crop of some importance and extensive planting is being prosecuted in many places. In the wetter districts, especially in moist shady places the leaf affection caused by *Omphalia flavida* is in evidence. The leaf berry disease caused by *Sclerotium coffeicolum* is present on the *excelsa* variety. It does considerable damage in the wet season.

There are occasional sporadic outbreaks of thread blight caused by *Pellicularia koleoga*, nematodes in the roots and Rosellinia root disease. So far coffee is not affected by any insect pests of consequence.

LIMES.—Owing to the long spell of dry weather, the setting of the lime crop was exceptionally good and large returns were secured and the wither-tip fungus *Glocosporium limeticola.*

HIBISCUS sp.—This ornamental plant has been attacked by nematodes in Port-of-Spain and some outside districts. It was noticed that the outbreaks were inadequately drained land.

BANANA.—The Giant Banana, suckers of which were imported from Grenada has been established in various parts of the Island. The only diseases seen and those only in a limited way have been nematodes and *Marasmius* sp.

The plantain weevil attacks the Giant Banana.

PARASOL ANTS.—The number of parasol ants nests destroyed in Port-of-Spain and surburbs were 110.

The number and area of parasol ants nests destroyed during the year are as follows :

District.	*Number.*	*Area in Sq. Ft.*	*OZ. CS2 Used.*
St. Patrick ..	57 ..	55,598 ..	1,543
Caroni ..	93 ..	174,084 ..	3,520
Nariva-Mayaro ..	62 ..	89,283 ..	1,819
Victoria ..	72 ..	103,650 ..	3,186
St. George ..	61 ..	157,831 ..	3,361
St. Andrew and St. David	75 ..	151,420 ..	3,206
Tobago ..	142 ..	161,084 ..	3,535

LOCUST.—No outbreaks were reported this year.

GENERAL.—Mole crickets continue to be troublesome to lawns all over the Island. Owing to the drought the Chinch bug was numerous on lawns but the damage was generally mistaken for the work of the mole cricket. Rice was attacked by the striped cane looper *Mocis repanda,* in the Eastern districts. The pineapple Lycaenid, *Tmolus Thulia,* was numerous and destructive.

PLANT PROTECTION ORDINANCE.—As usual the provisions of the Plant Protection Ordinance were carried out by the Agricultural Advisers under the direct supervision of the Chief Inspector.

Owing to the serious outbreak of the Cacao beetle it was necessary to serve 244 orders for the destruction of this pest.

The following table shows the number of inspections in connection with the importation of plants for propagation :

Seeds and plants..	790
Bags	458
Consignments destroyed	15
Do. disinfected..	3
Total	1,266

AGRICULTURAL ADVISERS' WORK.

Practical assistance to all classes of cultivators but particularly the peasantry is given by the Agricultural Advisers who have one or (in two cases) two counties each as their districts. They are the local officers for Plant Protection Ordinance work, visiting school gardens and numerous other duties. The following summary of their detailed reports affords useful information of work done and of agricultural activities generally in the different counties :

County of St. George.

VISITS.—Total 1,260, including 618 on sugar cane mosaic work, 221 on general Plant Protection Ordinance work, 100 on Cacao beetle and 100 school gardens. Mileage 4,232.

CROPS.—The promise for cacao was generally good up to October. Estates on the limestone area which paid proper attention to destruction of black pods and canker control saved most of their crop, whilst estates well situated but badly managed lost heavily. Heavily shaded and carelessly kept estates on clayey soils lost about half their crop. Many had been advised in advance but failed to take action, often on the ground of expense. Canker in some of these estates is as great a menace as black pod. The coffee crop was poor. Lack of attention to pruning is almost universal, and the new plantings will scarcely more than compensate for the falling off in yield of the older trees unless this is remedied.

Oranges fruited well, but collar rot is prevalent especially in the Santa Cruz and Diego Martin Valleys. The area under pineapples is slowly increasing and more attention might be given to Tonca beans which thrive and are but little subject to troubles.

DISEASES AND PESTS.—Mosaic disease demanded the most attention. Inspection at the end of 1925 showed a marked increase in intensity in the old district and a spread eastwards. The disease has once again been brought well under control, after inspection of practically every patch of cane in the county, the serving of 170 orders and the destruction of thousands of stools. Lack of appreciation by the cane farmer of the nature of the disease, and the harm done by moving cuttings from affected stools to fresh districts are very serious obstacles to eradicating the trouble. However, the situation is now better than it has been since 1920.

The Cacao beetle situation in the county is by no means alarming. Considerable time was given to the pest.

Coconut diseases have increased with extension of the area under cultivation. A good deal of trouble is due to bad agricultural practices and refusal to accept and act upon advice. In 14 cases of the latter type orders were served and compulsory action begun.

Sixty-one parasol ants nests, area 157,831 square feet were destroyed on Crown Lands, and numerous complaints from private lands investigated and settled. 36 orders for bird vine and love vine were issued ; these pests have considerably reduced.

Fifteen estates were visited and reported on for the Agricultural Bank, often on Sundays to be able to meet absentee proprietors.

School gardens called for 100 visits ; the standard has again been raised the county retaining the Medal. In many schools there is however need of much improvement.

County of Caroni.

VISITS.—514 vists were paid entailing travelling of 4,277 miles.

DISEASES AND PESTS.—Cacao beetles increased, largely due to drought, neglect and defective cultivation. Many cultivators at first indifferent, are adopting control measures. The plantain weevil continues to increase and very little if any attention is given to the control measures advised. The froghopper attack was very severe. Bird vine and love vine continue to decrease. Redring of coconuts was largely controlled and some more attention than formerly is now given to treating cases of little-leaf disease. Only large proprietors pay attention to advice given on root disease of cacao, the small cultivators being still indifferent. Die back and algal diseases were prominent during the drought, and more attention to the advised control measures is essential.

The school garden work showed an improvement, but much more could have been effected.

County of Victoria.

VISITS.—678 including 72 to schools and 22 to Agricultural Bank properties. Mileage covered 5,803.

CROPS.—These were affected by the abnormal season, five months drought with very hot days and drying winds. In certain areas with poor soils and situation, combined sometimes with lack of proper attention the death rate of cacao trees was very high ; the average might be put at about 16 per cent. The majority of planters do hardly any tillage and whatever reasons may be the cause for this, there is scarcely any doubt that had proper tillage been practised previously the losses would have been much lower.

The coffee crop was irregular, very poor returns were obtained as might be expected from trees planted amongst cacao and neglected.

The corn crop was excellent ; yams are increasing, the Lisbon being most grown, but sweet potatoes were rather limited. The rice crop in suitable localities was good. Good fruit is very scarce in the county and but little has been done to grow more.

DISEASES AND PESTS.—Owing to the prevalence of the Cacao beetle the Adviser spent four months (dry season) in the Moruga district. It was extremely difficult to get the majority to take the necessary action without adopting compulsory measures. Seventy-two parasol ants nests, total area 103,650 square feet were destroyed on Crown lands. Redring of coconuts was prevalent, very few cases of bud rot were seen, and little-leaf was negligible. Pod rot of cacao occurred at the end of the year particularly in fields over shaded or inadequately drained, and algal disease was prevalent in open exposed situations. Most of the trouble of cacao can be prevented or remedied by attention to cultural conditions, but many fields are now so derelict that to restore them a large unremunerative expenditure over a number of years would be necessary.

Grasshoppers paid a visit, as usual, but did little damage. Heavy damage was done to cane by the Froghopper.

School garden work again only reached a low standard. Many schools are handicapped by lack of necessary tools. In a few schools the work was excellent.

County of St. Patrick.

VISITS.—1,156 visits were paid, 892 on Plant Protection work, 216 general, and the remainder to schools and inspections for the agricultural bank.

Crops.—Cacao suffered from drought early in the year and excessive rain at the close. About 200 acres of new lands were opened up. Coconuts gave an average crop, but drought increased the proportion of culls. The rice suffered at first from caterpillars, but on the whole the crops were very satisfactory. Tobacco remained stationary as regards area and the crop was poor due to drought, which also caused crops of ground provisions, corn, &c., to be smaller than usual.

Diseases and Pests.—Wither tip of limes, and black pod and canker of cacao were more in evidence. On the other hand the diseases of coconuts appreciably decreased particularly on the larger and better worked estates. Prevalence of the cacao beetle necessitated special efforts and 261 properties were visited, a total of 727 visits being paid. 57 parasol ants nests were destroyed ; total area 55,598 square feet.

County of Nariva and Mayaro.

Visits.—1,049 visits were paid, including 292 on Plant Protection Ordinance work and 46 to school gardens. In addition 34 reports were made for the Agricultural Bank. The mileage covered was 3002.

Crops.—Hundreds of acres of new lands have been put under cultivation, but a very much larger area has been wiped out by the drought. Cacao suffered severely, about 10 per cent. of the trees being killed it is estimated. Coconuts were also very adversely affected, thousands of trees dying especially on the hills, and the general yield and size of nuts greatly reduced elsewhere. The area under rice increased but unfavourable weather and an epidemic of caterpillars in August and September caused a poor crop. The coffee crop was also very poor ; fresh plantings are being made throughout the district. Ground provisions were plentiful excepting from June to September the drought cutting short the crop. Para rubber was tapped on three estates, but one discontinued it owing to low yield.

Diseases and Pests.—The cacao beetle increased greatly after the drought and thrips appeared in some areas. In the wet latter portion of the year pod rot and canker of cacao increased, as well as thread blight in cacao and coffee. Over 100 parasol ants nests were dealt with and action taken against bird vine, love vine, coconut diseases, &c.

Counties of St. David and St. Andrew.

3261 miles were covered in visits during the year.

Crops.—The major crops suffered from the adverse season, as also rice. On the other hand the ground provision, corn and fruit crops were particularly good.

Diseases and Pests.—The increase in cacao beetle in certain districts called for special efforts, the causes of this outbreak were drought, heavy winds, and the denudation taking place in the Wind Belt Reserve, largely the result of fires. 266 visits were paid in the worst areas, and 110 orders served. In two cases compulsory action, entailing much time had to be taken. Distribution of the Departmental pamphlets was of considerable assistance. 75 parasol ants nests were destroyed on Crown Lands, and by compulsion, 7 on private properties. Thrips caused damage in some areas and some spraying was done by owners. Bird vine and love vine were attended to as necessary. Coconuts suffered from drought, but loss from actual disease was not so marked. Black pod of cacao increased during the wet months at the close of the year.

Agricultural Bank work used up much time in the latter months ; 48 estates were visited, some two or three times, advice given and written reports sent in.

The schools were visited, but the work in their gardens, &c., continues in many cases to be unsatisfactory.

Tobago.

VISITS.—581 visits were paid to small cultivators, 77 to estates, 74 to school gardens and 65 meetings of Agricultural Credit Societies and Agricultural Societies attended. Mileage covered was 3,363.

DISEASES AND PESTS.—142 parasol ants nests were destroyed of a total area of 162,000 square feet.

Thrips appeared on cacao in a few small areas, mostly under conditions of exposure and poor cultivation. Black pod and canker were serious particularly where very little plant sanitation is practised. Rosellinia disease has been prevalent particularly on avocados planted through cacao. Redring of coconuts continues to take its toll. Estate treatment is mostly confined to scorching the trees, whilst the proper method advised of isolating affected trees is infortunately neglected. Withertip of limes continues to spread, but in spite of it there was a good crop and about 10,000 barrels of fruit rotted for want of a suitable market.

The plaintain weevil continues to spread, and it is with great difficulty that those interested can be persuaded to adopt simple precautionary measures.

The collar rot on pigeon peas allowed to ratoon continues to be prevalent.

Coffee continues to receive increased attention.

The cacao crop was the heaviest since the storms of 1921 and 1922 which did great damage. The prospects of coconuts are good owing to increase in area and cultural care on several estates.

W. G. FREEMAN,
Director of Agriculture.

19th October, 1927.

TABLE I.—Revenue and Expenditure.

	1926.	
	Expenditure.	*Revenue.*
	£ s. d.	£ s. d.
HEAD OFFICE :		
Personal Emoluments	7,561 2 11	
Travelling Exhibition and Other Charges	991 6 0	
Laboratory Expenses	66 13 6½	
Plant Diseases and Pests	16 5 0	
BOTANICAL DEPARTMENT, TRINIDAD :		
Personal Emoluments	784 8 1	
Maintenance and Improvements, Royal Botanic Gardens and St. Clair Experiment Station	1,798 19 5½	
Care of Trees on Government Lands	96 18 6	
Maintenance, Red House Grounds	63 11 8	
Other Charges	388 0 10	1,289 12 7½
BOTANICAL DEPARTMENT, TOBAGO :		
Personal Emoluments, Travelling and Telephone Rent ..	336 10 0	
Maintenance, Botanic Station and Government House Grounds ..	330 15 5	98 16 4
RIVER ESTATE :		
Personal Emoluments	609 0 0	
General Maintenance, &c.	3,031 7 4½	
New Buildings and Improvements	279 3 2	3,272 8 10
ST. AUGUSTINE EXPERIMENT STATION :		
Personal Emoluments	372 0 0	
Maintenance, Cultivation of Crops, &c.	2,580 1 10½	1,246 18 7
GOVERNMENT FARM, TRINIDAD :		
Personal Emoluments	398 3 0	
Maintenance	4,777 17 3½	
Purchase of Stock (Trinidad and Tobago)	843 0 8	6,652 3 10
GOVERNMENT FARM, TOBAGO :		
Personal Emoluments	175 0 0	
Maintenance	449 19 0	297 4 0
GOVERNMENT VETERINARY SURGEON :		
Personal Emoluments, Travelling, Contingencies	117 14 4½	1,267 3 4
QUEEN'S PARK AND PASTURES :		
Personal Emoluments	125 0 0	
Maintenance	1,108 12 4½	281 4 8
AGRICULTURAL EDUCATION :		
Personal Emoluments, Travelling, &c.	2,446 19 10½	
PLANT PROTECTION ORDINANCE :		
Travelling, &c.	58 6 0	
Destruction of Pests	349 7 9	
AGRICULTURAL CREDIT SOCIETIES :		
Personal Emoluments, Travelling, &c.	190 16 0½	
GROUND PROVISIONS DEPOTS AND FRUIT SHOP	7,818 13 10	7,060 15 5½
Total	38,165 14 0½	21,466 7 8

TABLE II.—Principal Agricultural Exports, Trinidad and Tobago.

	1926.			1925.	
			£		£
CACAO :					
Raw Cacao	50,067,881	lb.	1,270,335	49,476,609	1,257,255
SUGAR CANE AND PRODUCTS :					
Vacuum pan, Grey Crystal	57,625¾	tons	871,156	30,913	454,396
Do. White Crystal	2½	tons	54	2	80
Do. Yellow Crystal	6,137½	tons	107,186	25,751	567,192
Molasses Crystal	1,410½	tons	17,872	2,886	51,750
Muscovado Sugar	502¼	tons	6,960	747	11,786
Refined	250	lb.	2	349	7,307
Molasses	1,427,274	gals.	14,330	1,271,050	29,639
Rum	71,213	gals.	10,933	28,474	5,319
Bitters	56,599	gals.	80,915	58,336	75,734
COCONUT AND PRODUCTS :					
Coconuts	5,041,036	No.	25,135	8,633,981	45,834
Copra	13,858,996	lb.	166,263	9,965,499	131,243
Coconut Oil	82,791	gals.	15,373	76,318	15,753
COFFEE :					
Raw Coffee	497,688	lb.	20,371	597,722	28,202
RUBBER :					
Raw Rubber	163,399	lb.	19,251	110,652	9,529
LIMES :					
Lime Juice	7,886	gals.	1,926	6,171	1,314
GRAIN, PULSE, STARCHES, &C. :					
Corn (Maize)	232,310	lb.	1,076	250,737	1,297
Peas and Beans	1,268,505	lb.	10,040	1,883,420	18,828
FRUIT :					
Oranges	1,273,090	No.	1,324	1,388,674	1,439
Other kinds	..		425	..	197
MISCELLANEOUS :					
Plants and seeds	..		875	..	882
Spices (Nutmegs)	13,763	lb.	657	27,970	1,783
Honey	44,914	lb.	466	38,821	539
FOREST PRODUCTS :					
Cedar(undressed)	19,632	cu.ft.	3,085	47,250	5,468
LIVE STOCK AND ANIMAL PRODUCTS :					
Live Stock	33	No.	384	165	3,830
Hides and Skins	11,697	No.	11,940	10,388	8,877
Leather (unmanufactured)	7,113	lb.	608	12,995	1,020
			2,658,942		2,736,493